Namibia's Draft Fourth National Report to the United Nations Convention on Biological Diversity (UNCBD)

August 2010

Compiled by the Namibian Ministry of Environment and Tourism

Executive Summary[1]

Namibia continues to invest in biodiversity conservation and major accomplishments have been made in the reporting period since the submission of the 3rd National Report to the Convention on Biological Diversity (CBD) in 2005. Government, international partner organizations, the private sector and civil society engagement and commitment have driven the accomplishment of major outputs set out in Namibia's National Biodiversity Strategy and Action Plan (NBSAP), which was published in 2002 and which laid out a comprehensive range of biodiversity conservation and management actions for the time period 2001-2010. A key instrument for facilitating the implementation of the CBD in Namibia, the NBSAP has guided investments and priority actions on biodiversity matters, and is making significant contributions to global environmental management. Namibia enjoys significant support from the Global Environment Facility (GEF), and well-designed projects addressing key areas of the NBSAP, have made major contributions to its successful implementation and the application of CBD guidance at the national and local level.

There are some key challenges to the successful conservation and management of biodiversity in Namibia, which require targeted and continuous intervention and support. These include the impacts of continued population growth, consumption and production patterns, as well as environmental threats such as alien invasive species and climate change. In addition, Namibia is confronted by pressing development issues such as the debilitating effects of poverty, unemployment, and the HIV/AIDS pandemic. High priority is given to addressing these issues in Namibia, and noteworthy efforts are being made to link biodiversity conservation and management to such issues. The major efforts and resources that have and continue to go into Community-based Natural Resource Management (CBNRM) approaches throughout the country are an inspiring example of how to address poverty reduction, development and conservation goals in an integrated manner.

Key policy advancements have been made in Namibia over the past five years, which are mainstreaming biodiversity concerns into other sectors and related environmental policy processes and instruments. It is clear that capacity shortcomings must be addressed over the longer-term and that targeted supporting actions are needed. It is recognised that local level management, national research and science, as well as policy-level management capacities need to be strengthened, at individual and institutional levels. Although strong partnerships have been established between public, private and civil society stakeholders, a more supportive and enabling policy framework and the attitudes of individual decision makers must be continuously fostered to achieve synergistic and supportive action in areas relating to biodiversity conservation and management.

Although Namibia has a very comprehensive NBSAP, a formal assessment of its performance and implementation status has never been attempted until now. It is recognised that a more formal review than the one contained in this report would greatly help future decision-making and planning on biodiversity matters, and it is a top priority for Namibia to update the NBSAP and continue using this implementation tool for national planning of biodiversity interventions.

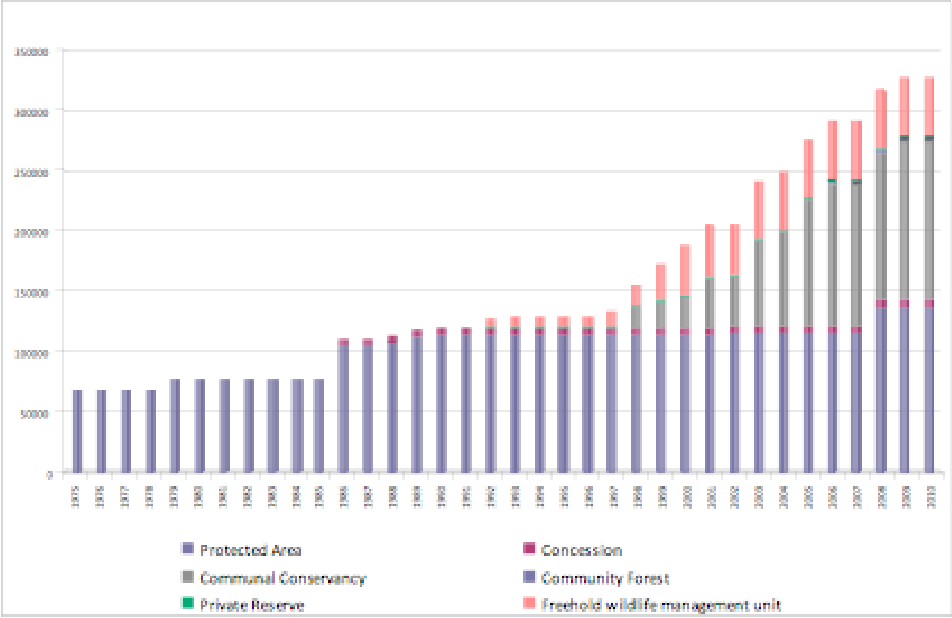
This Executive Summary follows the reporting outline and highlights the key points from each of the reporting sections.

[1] References to sources used are not quoted in the executive summary but are quoted accordingly in the main text.

Chapter I: Status and Trends of and Threats to Biodiversity

Status of Biodiversity: Over the reporting period, Namibia has made significant advancements in establishing new protected areas and promoting conservation of biodiversity outside of formal state-protected areas. Encouragingly, the entire coastline is now under some form of conservation status, while the entire country is home to 20 state-protected areas, covering 140,394km^2 or some 17% of the total land mass. While the century old Namib-Naukluft and Etosha National Parks are the most famous, all of Namibia's protected areas represent symbols of active conservation success. An expanding network of conservancies and community forests is improving the conservation of biodiversity in areas outside of state-protected areas and in many cases they adjoin these areas, which is reopening wildlife corridors and creating opportunities for collaborative management approaches. Conservancies and community forests are also proving a useful vehicle for promoting the sustainable use of biodiversity in terms of indigenous plants and non-timber forest products.

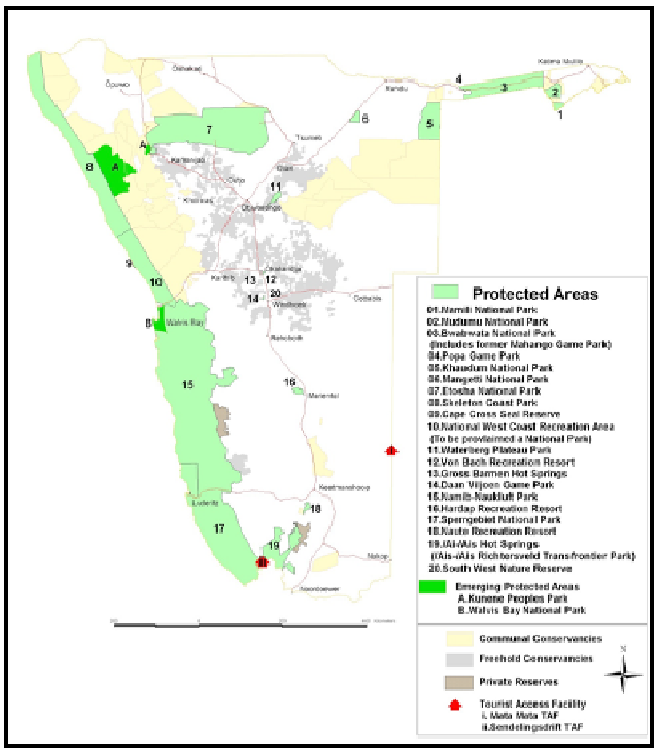
Trends in Biodiversity: Active efforts have been made over the past five years, to improve the biodiversity representativeness of Namibia's protected areas, with targeted protection of ecosystems as well as indigenous and endemic species occuring outside of the protected area network. Significant conservation efforts have been focused on high endemism areas, as an essential means to reduce the global loss of species. Namibia is fully aware that the greatest potential for limiting biodiversity loss is to be achieved by preventing the degradation of semi-natural ecosystems, which are currently under sustainable use, in areas outside of formally protected areas.



The contribution of different types of conservation management to Namibia's protected-area network.

The following conservation areas can be distinguished in Namibia and combine to ensure that approximately 40% of Namibia is under some form of conservation management: (1) Protected areas on

state land, (2) Communal Conservancies; areas in which communities in communal areas gain rights to use, manage and benefit from the consumptive and non-consumptive use of wildlife within defined boundaries, (3) Freehold Conservancies and private game reserves; established by private landowners to dedicate their land to wildlife management for wildlife tourism, trophy hunting and the sale of live game and meat, and (4) Tourism Concessions; these cover rights to conduct tourism activities and/or commercially use wildlife resources on business principles and (5) Community Forests; these offer communities the rights to sustainably manage forests and their associated natural resources. The Government of Namibia is pursuing an innovative and effective approach, which seeks to integrate the different types of conservation areas mentioned above to shore up the overall protected area network and to test novel collaborative management approaches.



The coverage of Namibia by the different forms of conservation management

Three national parks, Bwabwata, Mangetti and the Sperrgebiet were proclaimed in 2007 and 2008, and the Dorob National Park has been proclaimed in 2010. These have added considerably to the state-protected area and have placed a variety of different biomes under the highest possible form of conservation management. Of these developments, the proclamation of the Sperrgebiet has been the most siginificant. It became the country's second largest national park covering an area of 22,000km^2 and importantly it places almost the entire Namibian part of the Succulent Karoo "biodiversity hotspot" under protection, which constitutes a major contribution to global biodiversity conservation efforts.

The growth in communal conservancies in Namibia has been rapid and these represent a very important addition to the protected area network as they place a sizeable percentage of the sensitive Namib

escarpment hotspot under conservation. Communal conservancies are also heavily concentrated in the mammal rich north-eastern areas of the country. Many conservancies lie next to other conservation areas and thereby enlarge conservation management areas and this facilitates improved connectivity, more open systems and broader wildlife corridors. As of March 2010, there were 59 registered conservancies in Namibia covering some 12 million ha with 42 of those located immediately adjacent to protected areas or in the corridors between them. This has further created opportunities for collaborative management options between the respective conservancies and state protected areas such as Etosha, Khaudum, Bwabwata, Mudumu and Mamili National Parks. Freehold conservancies are also well established in the Acacia tree and shrub savannah biome, which is home to the world's largest population of cheetah.

Trends in Species Diversity: Updated data is mainly available for mammals and larger vertebrates, and only selected and geographically limited research has been carried out for invertebrates and other smaller taxa and organisms during the reporting period.

Wildlife: The impacts of improving and refining the protected area network on wildlife have been impressive. Ongoing monitoring of wildlife numbers is led by the MET, and both conservancies and national parks make use of an Incident Book or Event Book System to monitor a range of activities, events and statistics with regard to wildlife. Several sources of information reveal increasing wildlife numbers in many areas of the country, particularly areas within the protected area network. This includes threatened and flagship species such as black rhino and elephant. Numbers of Namibian plains game species such as oryx, springbok and kudu as well as rare and endemic species such as the Hartmann's zebra and black-faced impala, have also increased rapidly over the past 30 years.

Plants: Out of Namibia's approximately 4,000 plant taxa, about 585 are considered to be endemic. A further 530 taxa or 14% are near endemic. The most recent evaluation of about 1300 of Namibia's plant species has shown that 29 (0.8%) fall into the threatened categories according to the IUCN system, however it is believed that this is an underestimate. A preliminary analysis of Important Plant Areas (IPAs) in Namibia has also been carried out. 40 areas spread across the country were identified and are currently being confirmed.

Birds: Of Namibia's 676 known bird species, 60 (or 9%) are recognized as being under threat in Namibia's Red Data Book. The birds under threat are categorized into four major groups (1) Inland wetland birds (19 species (32%; plus 3 raptor species = 37%)), (2) Birds of Prey (18 species (30%)), (3) Peripheral birds of the northern river systems that live in riparian, tropical habitats (8 species (13%)), and (4) Coastal and Marine Birds (15 species (25%) plus 5 coastal wetland species = 33%). Namibia is also home to 19 Important Bird Areas (IBAs), 12 of which are located in the coastal zone or on off-shore islands (including 3 of our Ramsar sites). IBAs are also recognized as sites of global significance for biodiversity conservation, using globally standard criteria and thresholds.

Other taxa: Limited information is available for fish and marine resources, as well as Insects, arachnids, amphibians and reptiles. It is noted as a key shortcoming in Namibia that there is currently no dedicated national biodiversity monitoring programme to address information needs on such taxa.

Threats to Biodiversity: Threats to ecosystems and species have been partially assessed, although since earlier work undertaken in 2002, a systematic assessment of such threats has not been updated during the reporting period. Among the identified key threats to biodiversity are: (1) unsustainable water uses, (2) climate change, (3) uncontrolled mining and prospecting, (4) continued population growth and

increased consumption patterns, (5) unsustainable land management practices, (6) alien invasive species, (7) some poorly directed tourism and recreation activities, and (8) human wildlife conflict. Several project and policy interventions are underway in Namibia to address these threats. Notably, dedicated projects strengthening Namibia's capacity to deal with climate change and land management are underway, and human wildlife conflicts are being managed proactively by the MET through the framework of National Policy on Human Wildlife Conflict Management, which was approved in 2009. Alien invasive species are currently not very aggressively managed, although policy instruments are partially in place controlling imports of exotic animal and plant species. Tourism and Recreation are generally considered to make positive contributions to biodiversity conservation in Namibia. It has however been observed that certain irresponsible tourism activities can have negative impacts on natural resources including biodiversity, and that uninformed and uncontrolled tourism can lead to vandalism in protected areas and the disturbance of protected species.

Chapter II: Status of Implementation of NBSAP

Namibia's National Biodiversity Strategy and Action Plan serves as the country's strategic plan of action for the period 2001-2010 to promote sustainable development through biodiversity conservation. It was borne out of Namibia's National Biodiversity Programme (NBP) (1994-2005) and was shaped by a wide variety of stakeholders including government ministries, research organizations, NGOs, private businesses and community-based organizations. A multi-sectoral National Biodiversity Task Force (BDTF), set up during the NBP, coordinated the functioning of 21 technical working groups. These working groups provided much of the technical input into the formulation of the NBSAP, while senior ministry representatives provided political guidance through roundtable meetings and other direct forms of contact.

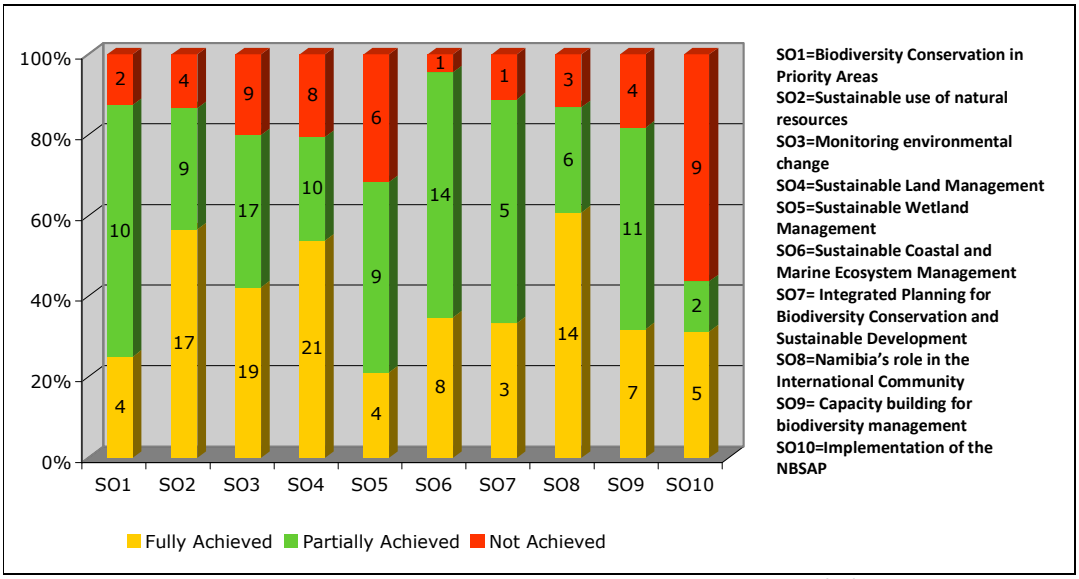
The overall objective of the NBSAP is to protect ecosystems, biological diversity and ecological processes through conservation and sustainable use, thereby supporting the livelihoods, self-reliance and quality of life of Namibians in perpetuity. It contains some 55 strategic aims and associated targets to achieve its overall objective. These are grouped into 10 key strategic themes which include (1) biodiversity conservation in priority areas, (2) sustainable use of natural resources, (3) research and environmental change monitoring, (4) sustainable management of land, (5) wetlands, and (6) coastal and marine environments, (7) integrated planning, (8) Namibia's international role, (9) capacity building, and (10) mechanisms for implementation. Explicit activities to be implemented to achieve the strategic aims are included in action plan logframes, which were formulated to allow for ease of tracking progress in implementation of the NBSAP.

Although no formal monitoring and evaluation (M&E) for tracking implementation progress ever took place on Namibia's NBSAP, a review as part of this 4th National Report indicates that a good deal of strategic aims and associated targets have been met, and that the majority of planned activities were addressed – in original or revised form.

NBSAP Targets reached	No. of Targets	% Breakdown
Fully Achieved	102	42.2
Partially Achieved	93	38.4
Not Achieved	47	19.4
Total	242	100

Summary of NBSAP targets achieved.

Based on an initial assessment, it can be stated that the NBSAP has been effectively implemented in Namibia. Over 80% of all targets were at least partially achieved. The achievement of so many of the targets, in the absence of an official monitoring and evaluation mechanism, represents a remarkable success. In addition the NBSAP was the first of its kind in Namibia and laid out a very ambitious and wide-ranging set of specific targets, which required close cooperation and action from a very diverse number of stakeholders. A number of MET and other government activities have been implementing elements of the NBSAP and a suite of internationally supported programmes have been directly implementing the key priorities and activities as laid out in the NBSAP.



Breakdown of NBSAP specific targets achieved as per strategic objective (SO).

The figure above allows for a more analytical breakdown of Namibia's performance in the implementation of its NBSAP. It should however be noted that the indications provided by this diagram are dependent on the measurability, practicality and quality of the particular targets set and thus may not be a true representation of the state of progress relating to each strategic objective area. In addition the timeframe applied to the specific targets was not strictly followed in this report owing mainly to difficulties in data assimilation and the ongoing nature of certain targets.

It is recognised that a more formal review would greatly help future decision-making and planning on biodiversity matters. It is a top priority for Namibia to update the NBSAP and continue using this implementation tool for national planning of biodiversity interventions. Namibia's NBSAP was designed to take the CBD thematic programmes of work and cross-cutting issues into consideration and to address the key content of their substantive issues at that time (circa 2000-2002). A major draw-back has been that updating of the NBSAP to incorporate more recently developed guidance, work programmes and cross-cutting issues of the Convention has not taken place – although some key aspects have been addressed (e.g. Namibia had incorporated work on mountain biodiversity even before such a programme of work was agreed to by the Convention).

Chapter III: Mainstreaming Biodiversity

The MET has been driving the mainstreaming of biodiversity into other sectors and programmes since the foundation of the National Biodiversity Programme in 1994. Biodiversity conservation is recognized as a key tenet of sustainable development and it is well integrated into Namibia's long term development framework, which comprises of Vision 2030 and a series of 5 year National Development Plans (NDPs). While mainstreaming of biodiversity has taken place to a large extent, Namibia still experiences challenges with regard to the finalization and implementation of relevant policies. The importance of biodiversity conservation is also still not fully recognized by other sectors.

Over the reporting period, Namibia developed NDP3. The main thrust of NDP3 (2007/8-2011/12) is to accelerate economic growth while deepening rural development. NDP3 is comprised of eight key result areas (KRAs), one of which is the productive utilization of natural resources and sustainable development. This KRA aims to ensure the development of Namibia's natural capital and its sustainable utilization for the benefit of the country's social, economic and ecological well being. The NDP3 recognizes that this aim cuts across sectors, and outlines the ways in which the different sectors should contribute.

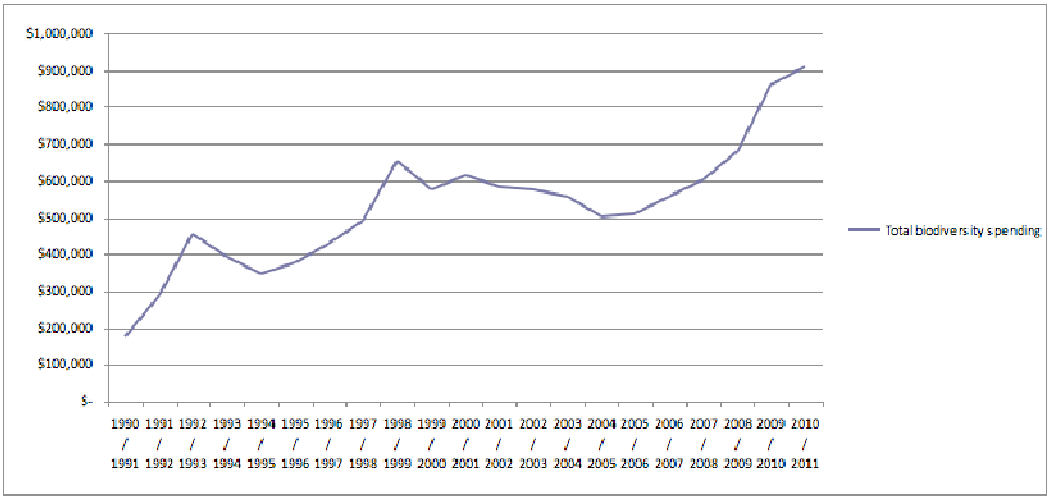
NDP3 also lays out a number of targets, which are monitored and evaluated at a mid-term interval and at the end of each five year cycle. The targets relating to the sustainable development KRA are closely aligned with those of the NBSAP and include indicators such as the area covered by conservancies, number of protected areas managed according to approved management plans and the percentage of targeted key wildlife species whose populations are stable or increasing. The mid-term evaluation of NDP3 is currently underway and the preliminary results show that Namibia is on track to meet many of its environment-related NDP3 goals by 2012.

Numerous biodiversity-relevant sectoral policies have been developed and/or promulgated since the last national report in 2005. The MET alone has developed more than eleven relevant policies and legal instruments key to biodiversity conservation since 2005. The finalization of such instruments, however, remains a key obstacle to mainstreaming biodiversity. The number of MET policies and legislation in draft form is an indication of this problem. Examples include the Pollution and Waste Management Bill (in draft form since 1999) and the Protected Area and Wildlife Management Bill, which has also been in draft form for many years. These pieces of legislation have very important roles to play in biodiversity conservation, and in mitigating some of the threats to biodiversity, and by not being brought to completion leave a significant gap in the national biodiversity policy framework. Even when important policies are finalized, regulations to make these policies legally binding often take many years to be approved.

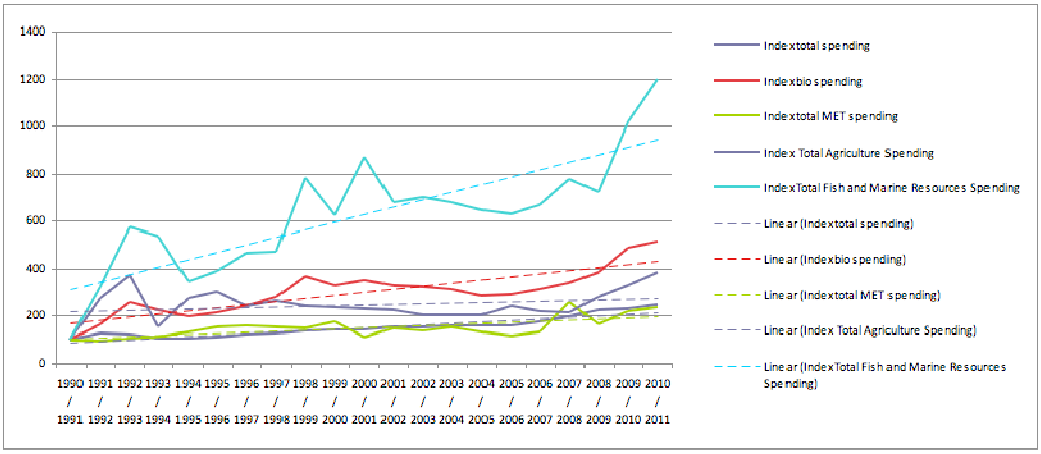
It is difficult to measure the extent to which policies are translated into on-the-ground action. In general thorough implementation of Namibia's excellent policy framework is lacking owing to shortages in human and financial resources, as well as the lack of a properly functioning decentralized system.

Recent analysis of budget allocation towards biodiversity conservation-related activities was undertaken through the MET Environmental Economics Unit, using planned expenditure data from certain directorates within the MET, MAWF and MFMR to approximate maximum government spending on biodiversity since 1990. The figures suggest that government investment in biodiversity is increasing. While this may be the case, it should be noted that this investment currently only accounts for approximately 3% of total government expenditure. Analysis further indicates that the MFMR has invested heavily since the mid 1990s on research and the development for a more effective

management capacity. These investments in areas such as monitoring, control and surveillance, as well as research and training are a good example of long-term government commitment to biodiversity conservation of marine resources. While expenditures on parks and wildlife management and forestry research and management also show upward trends, this needs to be substantially increased given Namibia's expanding protected area network and CBNRM programme.



Maximum total government spending on biodiversity (N$ 000s, 2010 prices)



Index of relevant ministry planned expenditure over time using 1990/1 as a base year.

In term of specific tools for mainstreaming biodiversity, Namibia has a strong framework pertaining to Strategic Environmental Assessments (SEAs) and Environmental Impacts Assessments (EIAs), which is manifested in the Environmental Management Act (2007). Biodiversity conservation is a key objective of these tools. Other instruments for biodiversity sensitive planning and land use include Urban Area Environmental Management Plans (EMPs), Integrated Regional Land Use Plans (IRLUPs), Devolved

Decision Making and Capacity Building, and the application of the Ecosystem Approach as an integral part of the national CBNRM Programme, to name but a few.

Chapter IV: Progress towards the 2010 target and implementation of the Strategic Plan

Namibia has made good progress with regard to reducing biodiversity loss and reaching the 2010 Target and the implementation of the Strategic Plan. The protected area network has expanded to cover comprehensively its two global "biodiversity hotspots". Its entire coastal zone, home to many endemic species, is now also under the highest form of conservation management. Collaborative management approaches have also been initiated in a number of conservation areas to improve wildlife connectivity.

Rights over wildlife and other natural resources have also been devolved to communities, which are promoting the sustainable use of these resources based on participatory monitoring activities. The results of this approach on wildlife numbers have been profound, and rising numbers of large mammals, including rare and threatened species, is the prevailing trend in Namibia.

Threats to biodiversity are also being addressed mainly through the development of appropriate policy and legislation, but also in increased investment and real efforts to mainsteam the importance of biodiversity conservation and sustainable development across sectors.

Progress on the Global Strategy for Plant Conservation (GSPC) Targets and the implementation of the Programme of Work on Protected Areas (PoW PA)

In terms of progress towards the global 16 targets of the GSPC, Namibia has included relevant national targets in its NBSAP. An assessment of progress made towards the national and international targets indicates that four targets (Target 4, 13, 14 and 16) have been fully achieved, while the majority of targets (ten targets) have been partially achieved. Another two, Targets 10 and 11, have not been adequately addressed in Namibia thus far, although individual activities have been implemented to start addressing them. Overall Namibia does make important contributions to the GSPC.

The relatively newly developed PoW PA has not been formally integrated into Namibia's NBSAP, as it was prepared under the Convention after the publication of the NBSAP. However, numerous activities to be implemented by Parties, are naturally reflected in Namibia's NBSAP and with the implementation of various projects and programmes in Namibia, extremely good progress has been made in the implementation of the PoW. A first assessment of progress on the PoW indicates that an astonishing 44% of activities of the PoW have been achieved in Namibia, whilst a further 51% are addressed and partially achieved to date. Only 3% of activities have not been achieved with these pertaining to local and indigenous communities (Goal 2.2) and communication, education and awareness (Goal 3.5). The first of these two goals is indirectly addressed through the Namibian conservancy and CBNRM programme outside of state-protected areas.

Conclusions and future priorities

This Fourth National Report has provided a useful analysis of Namibia's overall progress in implementing the CBD, as well as a more specific, albeit preliminary, analysis of its implementation of the NBSAP. Some preliminary lessons have been learned about our practical experience of NBSAP implementation. Some of the positive outcomes emanating from the NBSAP analysis include:

- The important role of the NBSAP in focusing investment from GEF-funded projects and international assistance into key biodiversity target areas was particularly significant. Many of these projects have subsequently tackled key biodiversity target areas.
- The NBSAP has also been a useful reference document for different ministries in mainstreaming biodiversity into their own strategic action plans and policies. Positive examples of government legislation guided by elements of the NBSAP include NDP3, the Forest Act of 2001, which paved the way for the establishment of community forests, and the Aquaculture Act (2002).
- Namibia's CBNRM programme is proving to be a powerful means of mainstreaming the ecosystem approach in Namibia based on an innovative and progressive partnership approach involving government, donors, NGOs and the private sector.

This report has thus proved a very useful exercise, however a more thorough analysis of the NBSAP was beyond its scope and is a necessary exercise. With the current NBSAP coming to a close in 2010, there is a clear need to find a suitable mechanism to develop a new, updated and improved NBSAP, based on strong analysis of lessons learned from Namibia's first NBSAP and the evolving mechanisms of the Convention. Key issues to consider that have been largely beyond the realm of this report include:

- Target setting: A rigorous evaluation of the targets laid out in the NBSAP would be a useful exercise addressing whether the targets were too ambitious or otherwise, and whether they have made a real difference to biodiversity conservation, and how best appropriate targets can be set in the future.
- NBSAP Mode of Implementation: how best could a new NBSAP be coordinated? The approach of institutionalizing the current NBSAP within MET did not materialize. A restructuring process is currently underway within MET and increasing budgetary allocations are being granted to the ministry. These could represent opportunities to mainstream a biodiversity-specific unit within MET or perhaps alternative coordinating mechanisms ought to be developed.
- Coordination of donor support: Given the wide array of donor support activities being undertaken relating to the environment sector, it is important that these activities are coordinated in an efficient manner so as to avoid duplication and maximize the impact of resource investments.
- Sustainability of GEF projects: While the vital contribution made by GEF-funded projects has been highlighted throughout this report, their sustainability after project termination is a challenging issue for Namibia.
- Pragmatic approach: At the time of the last NBSAP formulation, GEF-funded projects had not even been established in Namibia, and were not listed as potential implementing agents of the NBSAP's objectives. The subsequent key role they have played suggests that a fluid and flexible approach to planning for effective implementation of the Convention is necessary.

These are among the key priority areas that need to be addressed to ensure Namibia's optimal implementation of the UNCBD.

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List of Tables, Case Studies and Figures

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Abbreviations

ABS: Access and Benefit Sharing
BCLME: Benguela Current Large Marine Ecosystem
BDTF: Biodiversity Task Force Team
BIOTA: Biodiversity Monitoring Transect Analysis Project
CALL-C: Enhancing Insitutional and Human Resource Capacity through Local Level Coordination of Integrated Rangeland Management and Support
CBNRM: Community-Based Natural Resource Management
CBO: Community-Based Organisation
CCA: Climate Change Adaptation
CCF: Cheetah Conservation Fund
CEGEM: Strengthening Capacity Enhancement to Implement the Global Environmental Conventions in Namibia Project
CITES: Convention on Trade in Endangered Species
CONTILL: Conservation Tillage Project
CPP: Namibia's Country Pilot Partnership Programme for Integrated Sustainable Land Management
CRIAA: Centre for Research, Information, Action Africa
DED: German Development Service
DRFN: Desert Research Foundation of Namibia
EAF: Ecosystem Approach to Fisheries
EIA: Environmental Impact Assessment
EIF: Environmental Investment Fund
EMIN: Environmental Monitoring Indicators Network
EMP: Environmental Management Plan
EONN: Environmental Observatories Network of Namibia
EWC: Eudufano Women's Cooperative
FIRM: Forum for Integrated Resource Management
GDP: Gross Domestic Product
GEF: Global Environment Facility
GMOs: Genetically Modified Organisms
GNP: Gross National Product
GPS: Global Positioning System
GPTF: Game Product Trust Fund
GSPC: Global Strategy for Plant Conservation
GTZ: German Technical Cooperation
IBA: Important Bird Area
IBPC: Interim Bioprospecting Committee
ICEMA: Integrated Community-Based Ecosystem Management Project
ICZM: Integrated Coastal Zone Management
IGM: Innovative Grants Mechanism
IPA: Important Plant Area
IPTT: Indigenous Plant Task Team
IRABS: International Regime on Access and Benefit Sharing
IRDNC: Integrated Rural Development and Nature Conservation
IRLUP: Integrated Regional Land-Use Plan
IUCN: International Union for Conservation of Nature
KfW: German Development Bank
KRA: Key Result Area
LDMS: Land Degradation Monitoring System
LLM: Local Level Monitoring
MAWF: Ministry of Agriculture, Water and Forestry
MCA: Millennium Challenge Account
MDGs: Millennium Development Goals
MET: Ministry of Environment and Tourism
MFMR: Ministry of Fisheries and Marine Resources
MLR: Ministry of Lands and Resettlement
MME: Ministry of Mines and Energy
MNC: Mudumu North Complex
MPA: Marine Protected Area
MRLGHRD: Ministry of Regional and Local Government, Housing and Rural Development
MSBP: Millennium Seed Bank Project
NACOMA: Namibian Coast Management and Conservation Project
NACSO: Namibian Association of CBNRM-Support Organisations
NAMETT: Namibia's Management Effectiveness Tracking Tool
NAMPLACE: Namibia: Protected Areas Landscape Initiative
NAPCOD: Namibia's National Action Programme to Combat Desertification
NBP: National Biodiversity Programme
NBRI: National Botanical Research Institute
NBSAP: National Biodviersity Strategy and Action Plan
NDP3: Third National Development Plan
NFIP: National Forest Inventory Project
NGO: Non-Governmental Organisation
NNF: Namibia Nature Foundation
NPC: National Planning Commisssion
NPGRC: National Plant Genetic Resources Centre
NPRAP: National Poverty Reduction Action Programme
OKACOM: Okavango River Basin Commission
ORASECOM: Orange River Basin Commission
PESILUP: Promoting Environmental Sustainability Through Integrated Land Use Planning
PGH: Planned Grazing through Herding
POW PA: Programme of Work on Protected Areas
SABONET: Southern African Botanical Diversity Network
SADC: Southern African Development Community
SAIEA: Southern African Institute of Environment Assessment
SEA: Strategic Environmental Assessment
SNC: Second National Communication
SPAN: Strengthening the Protected Area Network
SPGRC: SADC Plant Genetic Resources Centre
TAC: Total Allowable Catch
TBPA: Transboundary Protected Area
UNAM: University of Namibia
UNCBD: United Nations Convention on Biological Diversity
UNCCD: United Nations Convention to Combat Desertification
UNFCCC: United Nations Framework Convention on Climate Change

CHAPTER I: OVERALL STATUS, TRENDS AND THREATS TO BIODIVERSITY

1.1 Introduction

Biodiversity and the natural environment are of special significance to Namibia, so much so that it is one of few countries in the world that includes a clause for its maintenance in its constitution. The country covers an area of approximately 824,000km^2, and a population of only 2 million people gives it one of the lowest population densities in the world. Thus the human impact on the environment is relatively low and the country is characterized to a large extent by open pristine landscapes, which are treasured by tourists and Namibians alike. Namibia is home to many impressive environmental features including the oldest desert in the world, Africa's largest river canyon, the world's largest population of cheetah as well as the world's largest and only free-roaming black rhino population.

Namibia is also one of the few dryland countries in Africa and worldwide to contain internationally recognized biodiversity hotspots – areas with extremely high species richness and endemism, which are considered of global importance. The Succulent Karoo biome in the Southern Namib desert is an endemism hotspot for succulent plants, reptiles and insects, while the majority of Namibia's endemic species are found in a hotspot belt along the western edge of the escarpment zone. This is a transition zone between the Desert, Nama Karoo and Savanna Biomes. Namibia's 1500km long coastline is also a rich source of biodiversity. The nutrient-rich waters of the Namibian coast support some of the greatest populations of marine life found anywhere in the world.

Encouragingly, the entire coastline is now under some form of conservation status, while the entire country is home to 20 state-protected areas, covering 140,394km^2 or some 17% of the total land mass (MET in press). While the century old Namib-Naukluft and Etosha National Parks are the most famous, all of Namibia's protected areas represent symbols of conservation success. An expanding network of conservancies, both communal and freehold, and community forests are improving the conservation of biodiversity in areas outside of the state-protected areas and in many cases they adjoin these areas, which allows for the reopening of wildlife corridors and the creation of opportunities for collaborative management approaches. Conservancies and community forests are also a useful vehicle for promoting sustainable use of biodiversity in terms of indigenous plants and non-timber forest products. In addition numerous privately owned former farms are now managed as wildlife sanctuaries or private game reserves and contribute greatly to national conservation efforts.

In spite of these successes, there are a number of ongoing threats to biodiversity conservation in Namibia, which are arguably becoming more serious. An expanding mining industry (particularly uranium and off-shore diamond mining) and increasing tourist numbers and associated activities pose a serious threat as they are concentrated in some of Namibia's most ecologically sensitive areas. In addition the different regions and land use systems are challenged by different difficulties. For example land degradation and desertification are major threats to the communal areas, while bush encroachment continues to have a major impact on commercial farming areas. National attempts to strengthen Namibia's food production, both for local consumption and export, are also causing land use conflicts in some areas and the establishment of large-scale bio-fuel investments in the north-eastern regions is encroaching on formal conservation areas. The effects of climate change on biodiversity are also being experienced, with the distribution of one of Namibia's flagship species, the quiver tree (*Aloe dichotoma*), already having been affected (Midgeley *et al* 2009).

1.2 Status of Biodiversity

Namibia's biodiversity is shaped by its diversity of climate, topography, geology and human influences. As the most arid country south of the Sahara, lack of rainfall and its high level of variability are perhaps the key influences on biodiversity. Namibia is characterized by a steep south-west to north-east rainfall gradient. Annual rainfall can be as low as 10mm in the south-west and west, while it averages around 600mm in the north-eastern areas (Mendelsohn *et al* 2003). A reverse gradient exists in terms of seasonal and daily temperature variations, which are low in the north and north-east and high in the west and south-west. As a result, the greatest overall terrestrial species diversity is found in the more tropical areas of North-eastern Namibia, while areas of high endemism are mainly concentrated in the arid and semi-arid west, central and southern parts of the country. The information used in this section draws mainly on Mendelsohn *et al* 2003.

1.2.1 Diversity of Ecosystems

Namibia is classified into four terrestrial biomes (desert, karoo (nama and succulent), acacia savanna, and broad-leafed savanna), and two aquatic biomes (coastal marine and wetlands). Each biome is affected to different extents by land uses such as rangeland farming, agriculture, wildlife production, tourism and recreation, mining and urban development. Namibia's variable environmental conditions have also shaped a large diversity of vegetation zones, which have been divided into 29 such zones. In general, palaeotropical floral elements are found in the north, cold-temperate elements in the south, and transitional elements between the two. The vegetation zones and biomes are shown in detail below.

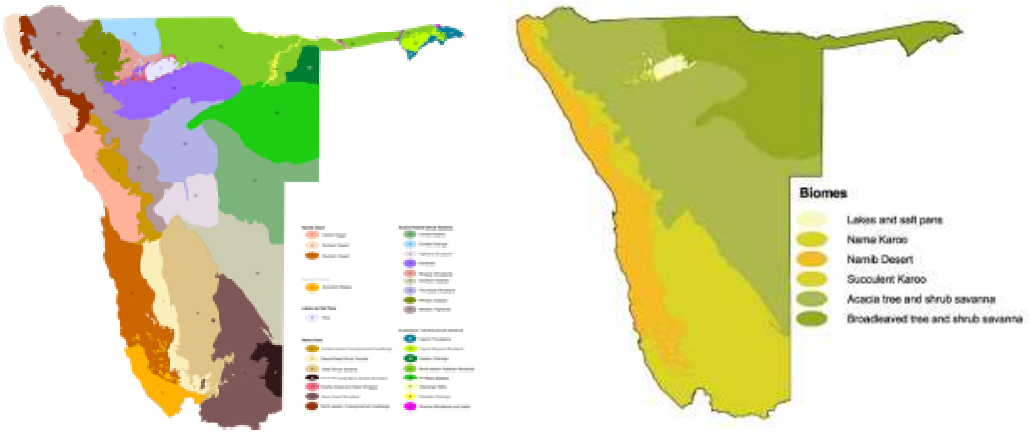


Fig 1: ***The division of Namibia into vegetation zones (l) and biomes (r)*** **(Source: Mendelsohn *et al* 2003).**

(i) Desert Biome

- Low rainfall (less than 100mm annually), and lack of surface water
- Sparse vegetation dominated by annual grasses and dwarf shrubs
- Large habitat diversity including mountains, gravel plains, sandy seas and succulent steppe winter rainfall regions
- Coastal fog plays a vital role in supporting many plants and animals

- Ephemeral rivers cut across the biome providing linear oases where large trees and water sources support many of the larger mammals and animals
- Systems within this biome are extremely sensitive and fragile and prone to long-term degradation with long recovery periods

(ii) Karoo Biome
- Annual rainfall is 100-200mm
- Vegetation dominated by dwarf shrubs or "Karoo bushes" and annual grass species
- Harsh climate with large seasonal and daily temperature variations
- The fauna in this biome is species poor but supported vast herds of springbok in the past, which were subsequently reduced by hunting and fencing
- Sensitive to over-grazing and degradation which can lead to desertification

(iii) Acacia Savanna
- Annual rainfall of 250-400mm
- Dominated and characterized by a wide variety of grass species and acacia species such as camelthorn and blackthorn
- Supports a high concentration of various species which are endemic to the region, and supports large plains game including herd animals and predators
- Contains the headwaters and catchments of most ephemeral rivers in Namibia
- Vulnerable to inappropriate management and over-use resulting in desertification and bush encroachment

(iv) Broad-leafed Savanna
- Annual rainfall of 450-700mm
- High species diversity, especially at the interface with the wetland biome
- Deciduous tree species are characteristic including Zambezi teak, mopane and wild seringa
- High numbers of large mammals are present including 70% of Namibia's elephant population and the majority of the buffalo and hippopotamus populations
- Important to transboundary cooperation as ecosystems are shared and species move across national boundaries
- Forest fires are a common occurrence in this biome

(v) Wetlands
- Multiple habitats including perennial rivers, ephemeral rivers, floodplains, pans, sinkholes, estuaries, swamps, marshes, springs and dams
- Typically highly productive systems which provide important sources of freshwater and vegetation
- Interact with all other biomes
- Important to the hydrology of areas through services such as the recharging of aquifers
- Provide important sites for breeding and refuge
- Vulnerable to over-abstraction of water, alien species and pollution

(vi) Coastal/Marine
- Characterized by the cold Benguela current which produces a nutrient-rich upwelling system
- Highly productive system which supports some of the highest concentrations of marine life in the world
- Multiple habitats including the littoral, shelf and abyssal zones, islands, lagoons and estuaries

- Threats include over-exploitation of fish resources, tourism and recreational activities, increased levels of mining in the coastal zone, pollution and expanding coastal settlements

1.2.2 Species Diversity

As an arid country, Namibia has a relatively low number of species compared to countries with more mesic ecosystems, however it possesses a high level of endemism. Plants, invertebrates, reptiles and frogs in Namibia are particularly high in endemism, while endemism for mammals, birds and fish are relatively low.

Taxonomic Group	Number of described species in Namibia	% of species endemic to Namibia
Amphibians	50	12%
Arachnids	618	11%
Birds	676	2%
Fish	114	8%
Insects	6,421	24%
Mammals	229	7%
Plants	4,334	17%
Reptiles	254	28%

Table 1: ***Number of described species in Namibia and levels of endemism (Compiled based on information from Simmons and Brown (in press), NNF (undated), and www.biodiversity.org.na)***

1.3 Trends in Biodiversity

1.3.1 Protected Area Network

Conservation has a long history in Namibia, with national parks such as Etosha and the Namib-Naukluft each over a hundred years old. However it has been recognized that Namibia's protected areas are not truly representative of regional biodiversity with many indigenous and endemic species occuring outside of the protected area network. Namibia is fully aware that the greatest potential for limiting biodiversity loss is through preventing degradation of semi-natural ecosystems, which are currently under sustainable use, outside of formally protected areas. Endemics tend to have a small distribution area and are thus more vulnerable to extinctions from pressures such as alien invasive species and habitat destruction. Conservation efforts focused on high endemism areas, therefore, are essential in reducing the global loss of species.

The following conservation areas can be distinguished in Namibia and combine to ensure that approximately 40% of Namibia is under some form of conservation management (these will be discussed in greater detail in Chapter II):

- Protected areas on state land: These take the form of national parks and game reserves
- Communal Conservancies: These are areas in which communities in communal areas gain rights to use, manage and benefit from the consumptive and non-consumptive use of wildlife within defined boundaries.
- Freehold Wildlife Management Units and Private Game Reserves: Established by private landowners to dedicate their land to wildlife management for wildlife tourism, trophy hunting and the sale of live game and meat These are playing a key role in livelihood diversification and the promotion of conservation as a viable alternative land use.

- Tourism Concessions: Concessions cover rights to conduct tourism activities and/or commercially use wildlife resources on business principles,
- Community forests: These offer communities the rights to manage forests and their associated natural resources in a sustainable manner.

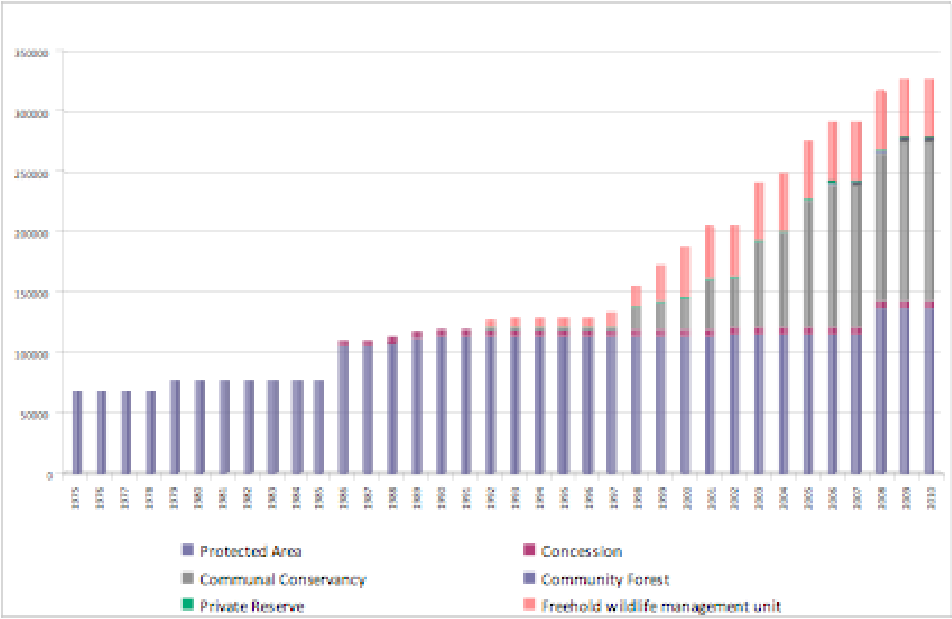


Fig 2: ***The contribution of different types of conservation management to Namibia's protected-area network*** **(Source MET (in press)).**

It has been pointed out in the past that Namibia's protected areas, although large in scale, were never fully representative of the country's biodiversity (Barnard (1998)). As our knowledge of biodiversity has improved, this issue is being addressed and Namibia is pursuing an innovative and effective approach, combining the different types of the afore-mentioned conservation areas to make the overall protected area network completely representative of its biodiversity. The need for an "extended and well-managed protected areas network to include biodiversity hotspots and transboundary areas" is even included in Namibia's long term development plan, Vision 2030.

The MET has taken the initative in recent years to make this vision a reality by conceptualising a project that tackles the incomplete bio-geographic coverage of the protected area system as well as its improved management effectiveness. This project, Strengthening the Protected Area Network (SPAN), has made great progress in this regard since its inception in 2005.

Three national parks, Bwabwata, Mangetti and the Sperrgebiet were proclaimed in 2007 and 2008, and the Dorob National Park has been proclaimed in 2010. These have added considerably to the state-protected area and have placed a variety of different biomes under the highest possible form of conservation management. Of these developments, the proclamation of the Sperrgebiet has been the most siginificant. It became the country's second largest national park covering an area of 22,000km^2 and importantly it places almost the entire Namibian part of the Succulent Karoo "biodiversity hotspot"

under protection. There is a particularly high diversity of plant life, mostly succulents, in the park with about 1050 plants or nearly 25% of the entire flora of Namibia occurring there on less than 3% of the country's land area (SPAN 2008a). The area is also rich in animals, reptiles, insects and invertebrates, and marine and bird life.

1996 also marked a significant turning point in terms of Namibia's conservation landscape. In that year Namibia enacted the Nature Conservation Amendment Act, which created the legal foundation for conservancies in communal areas. The growth in communal conservancies has since been rapid and they represent a very important addition to the protected area network as they place a sizeable percentage of the sensitive Namib escarpment hotspot under conservation. They are also heavily concentrated in the mammal rich north-eastern areas of the country. Many conservancies lie next to other conservation areas, thereby enlarging conservation management areas to create more connectivity, more open systems and broader wildlife corridors.

Conservancies have also set in motion a process of establishing resource monitoring by the communities in alliance with the MET as well as NGOs and projects. The evidence suggests that sustainable use and conservation of biodiversity is taking firm hold in these areas. Sustainable use has also begun to extend beyond wildlife to other natural resources including indigenous plants and forest products. In this way there is much potential for the reversal of degradation and biodiversity loss typically associated with communal areas.

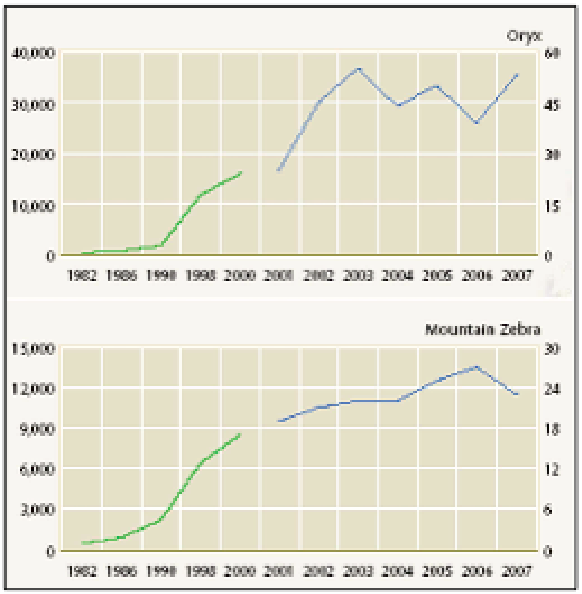
In addition to communal conservancies, freehold conservancies have also served to bring a significant portion of the acacia savanna biome under protection. Freehold conservancies have existed in Namibia since the late 1960s and are an important source of best practice information on sustainable wildlife management. The management of wildlife as a diversification strategy has much potential to safeguard biodiversity in this biome to which Namibia's plain game species are very well-adapted. This biome is also home to the largest cheetah population in Africa and is now the hub of Namibia's efforts to combat bush encroachment.

1.3.2 Species

1.3.2.1 Wildlife

The impacts of improving and refining the protected area network on wildlife have been impressive. Ongoing monitoring of wildlife numbers is led by the MET, and both conservancies and national parks make use of an Incident Book or Event Book System to monitor a range of activities, events and statistics with regard to wildlife.

Several sources of information reveal increasing wildlife numbers in many areas of the country, particularly areas within the protected area network. This includes threatened and flagship species such as black rhino and elephant. For example estimates for the population of black rhino have increased from 750 in 2002 to 1,677 in 2009 (MET in press), while the number of elephants is estimated at 12-16,000 (/Uiseb pers. comm.) with a growth rate of approximately 3.3% per year in the north-western regions (NNF 2008). Numbers of Namibian plains game species such as oryx, springbok and kudu as well as rare and endemic species such as the Hartmann's zebra and black-faced impala, have also increased rapidly over the past 30 years.



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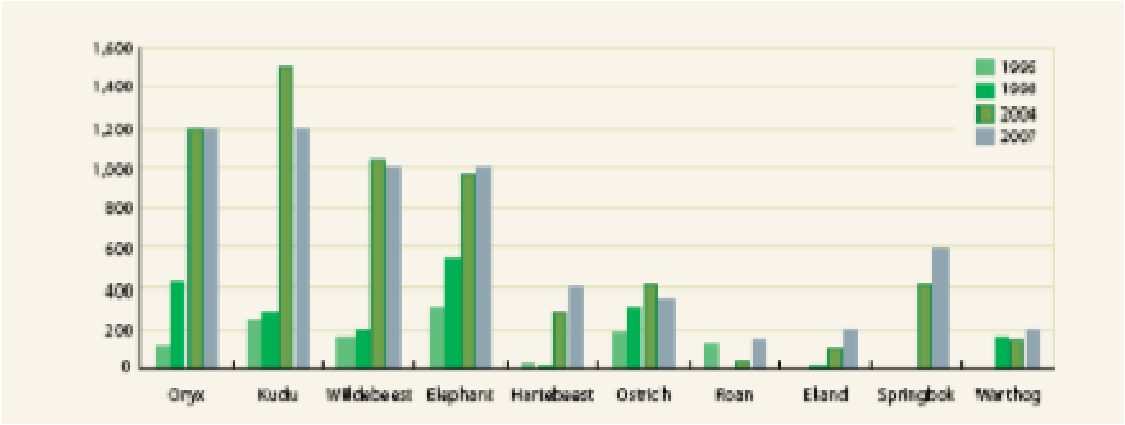
Examples of increases in wildlife numbers from around Namibia.
Fig 3 (Above): ***Trends in population of oryx and mountain zebra from Kunene Region in the north-west of Namibia (left axis: based on aerial surveys, right axis: estimates of numbers of animals per km2 based on vehicle surveys)*** **(Source: NACSO 2008).**
Fig 4 (Right): ***Results from 3 recent aerial censuses taken of wetlands in the species-rich Caprivi region*** **(Source: NNF 2009)**
Fig 5 (Below): ***Trends in game population estimates from Nyae Nyae Conservancy in the North-north east*** **(Source: NACSO 2008)**



1.3.2.2 Plants

Out of Namibia's approximately 4,000 plant taxa, about 585 are considered to be endemic. A further 530 taxa or 14% are near endemic. The most recent evaluation of about 1300 of Namibia's plant species has shown that 29 (0.8%) fall into the threatened categories according to the IUCN system (Kolberg 2009), however it is believed that this is an underestimate as not enough is known about all plant populations in the country and most of these evaluations were not based on intensive fieldwork. The fact that 8% of species are data deficient is indicative of this (Kolberg 2009). Mining related activities, agriculture, illegal collecting, climate change and various forms of human disturbance causing habitat destruction have been identified as the main factors threatening plant species with extinction in Namibia (Loots 2005).

Species	Area Found	Protection Status
Acacia montis-usti	North-west	F (LR-Ic)
Adenia pechuelii	North-west and Central-west	LR-nt
Caesalpinia merxmuellerana	South	LR-Ic
Caesalpinia pearsonii	West-central	
Ceraria longipedunculata	North-west	No conservation concerns
Commiphora anacardiifolia	North-west	No conservation concerns
Commiphora cervifolia	South	LR-nt
Commiphora dinteri	North-west and Central-west	Potentially threatened by illegal pachycaul trade
Commiphora giessii	North-west	Small population thus worthy of conservation
Commiphora kraeuseliana	North-west	Potentially threatened by illegal pachycaul trade
Commiphora saxicola	North-west and Central-west	Potentially threatened by illegal pachycaul trade
Commiphora virgata	North-west and Central-west	Potentially threatened by illegal pachycaul trade
Commiphora sp. nov.	North-west	
Cyphostemma bainesii	West-central	NC (LR-Ic)
Cyphostemma juttae	North-west and Karstveld	NC (LR-Ic)
Ectadium latifolium	South-west	Worthy of conservation because of limited
Elephantorrhiza rangei	Nauté Dam	DD
Elephantorrhiza schinziana	Otavi Mountains	Rare and worthy of conservation
Erythrina decora	North-west and Central	F (LR-Ic)
Euclea asperrima	Naukluft area	LR-nt
Euphorbia damarana	North-west and Central-west	C2
Euphorbia venenata	Central-north	DD (C2)
Haematoxylum dinteri	South	Restricted distribution
Heteromorpha papillosa	Central	
Lycium grandicalyx	South	
Manuleopsis dinteri	South	No threats reported
Neoluederitzia sericeocarpa	South	Very restricted distribution thus worthy of
Rhus volkii	Naukluft area	Restricted population
Salsola arborea	North-west	No threat recorded
Sesamothamnus sp. nov.	North-west	Not well known at present

Table 2: ***Namibia's endemic trees and shrubs and their conservation status/concerns (Adapted from the Tree Atlas of Namibia 2005). Legend: C2=CITES Appendix 2 species, DD= Data deficient (Red data status), F=Protected under Namibian legislation (Forestry Ordinance No. 37 of 1952 and/or Forest Act No. 72 of 1968) LR-Ic= lower risk, least concern (red data status), LR-nt= lower risk/near-threatened (red data status) NC=Protected according to the Nature Conservation Ordinance 1975.***

A preliminary analysis of Important Plant Areas (IPAs) in Namibia has also been carried out. 40 areas spread across the country were identified as preliminary IPAs at a workshop in 2004, sponsored by the Southern African Botanical Diversity Network (SABONET) and the MET (MAWF 2005). The preliminary IPAs are being compared with data from the National Herbarium Specimen Database and the Vegetation Mapping section of the NBRI to determine a final list of IPAs.

1.3.2.3 Birds

Of Namibia's 676 known bird species, 60 (or 9%) are recognized as being under threat in Namibia's Red Data Book (Simmons and Brown *in press*). The birds under threat are categorized into four major groups:

- Inland wetland birds (19 species (32%; plus 3 raptor species = 37%))
- Birds of Prey (18 species (30%))
- Peripheral birds of the northern river systems that live in riparian, tropical habitats (8 species (13%))
- Coastal and Marine Birds (15 species (25%) plus 5 coastal wetland species = 33%)

The main threats identified for these species are habitat loss/degradation; oil and other forms of pollution; over-fishing especially of pilchards; by-catch in fishing operations; lack of environmental awareness and local ownership of biodiversity resources.

Twenty coastal/marine bird species are of special concern in Namibia

*Namibian Red Data Status according to Simmons & Brown 2006;
G = global conservation status (in brackets) according to BirdLife International 2004

Species	Conservation status*	Species	Conservation status*
Albatross		**Gannet** Cape	Endangered (G Vulnerable)
Atlantic Yellow-nosed	Endangered	**Grebe** Black-necked	Near Threatened
Black-browed	Endangered	**Gull** Hartlaub's	Vulnerable
Shy	Near Threatened	**Oystercatcher**	Near Threatened (G Near
Wandering	Vulnerable	African Black	Threatened)
Cormorant		**Pelican** Great White	Vulnerable
Bank	Endangered (G Vulnerable)	**Penguin** African	Endangered (G Vulnerable)
Cape	Near Threatened (G Near Threatened)	**Petrel**	
		Northern Giant-	Near Threatened
Crowned	Near Threatened (G Near Threatened)	White-chinned	Vulnerable
		Plover Chestnut-banded	Near Threatened
Flamingo		**Tern**	
Greater	Vulnerable	Caspian	Vulnerable
Lesser	Vulnerable (G Near Threatened)	Damara	Near Threatened; breeding endemic

Table 3: ***Coastal/marine birds under particular threat in Namibia*** **(Simmons and Brown in press).**

Namibia is also home to 19 Important Bird Areas (IBAs), 12 of which are located in the coastal zone or on off-shore islands (including 3 of our Ramsar sites). IBAs are also recognized as sites of global significance for biodiversity conservation, using globally standard criteria and thresholds (Tarr 2009).

1.3.2.4 Fish/Marine Resources

While overall species richness and levels of endemism are relatively low, several species of marine fish and other marine organisms are particularly abundant along the Namibian coast as a direct result of the nutrient-rich Benguela current. Economically important fish and other marine species include hake, orange roughy and monkfish (demersal or deep-water species), which are found at the sea bottom far out to sea and provide the greatest economic returns; horse mackerel, pilchard and anchovy (pelagics usually closer to the surface and shore); and species associated with the coastline such as rock lobster,

seals and birds. In addition 31 species of cetaceans are known to occur in Namibian waters, and the heaviside dolphin (*Cephalorhynchus heavisidii*) is endemic to the Benguela current ecosystem (MFMR 2009).

In general conservative quotas and total allowable catches hold sway in Namibia to prevent the depletion of commercially important fish species, many of which were already at low levels of abundance at independence. Pilchard stocks are at particularly low levels, while anchovy catches have also declined greatly in recent years (Mendelsohn *et al* 2003). The situation is made more complicated by natural fluctuations in the Benguela system. For example during Benguela-Nino events, warm and more saline water can spread from Angola and its low oxygen content can make conditions unsuitable for many Namibian species (Barnard 1998).

Namibia's first Marine Protected Area (MPA) was proclaimed in 2009, and it is envisaged that this and future MPAs will play an important part in protecting the spawning and nursery grounds of commercially exploited species and other marine resources and thereby contribute to improved stock recoveries. They will also serve as safe migratory corridors for species of cetaceans such as the humpback whale (MFMR 2009).

1.3.2.5 Insects, Arachnids, Amphibians, Reptiles and Lichens

The numbers of species and levels of endemism of these organisms is described in table 1, but trends in their populations are difficult to discern. Formal tracking is not in place, other than through certain site-specific initiatives through the Gobabeb Training and Research Centre and the BIOTA Project among others. Environmental Impact Assessments (EIAs) are also proving a useful means of improving our knowledge of these organisms. A recent study of invertebrates as part of an EIA in the Central Namib desert revealed much useful information about the localized distribution ranges of particular species, key threats to populations and levels of endemism in the area (Irish *pers. comm*.).

Over 100 different kinds of lichen are known to exist in Namibia (Berry 2009), with most species concentrated in the Central Namib gravel plains. These lichens provide a good example of an often-neglected lower lifeform providing essential ecosystem services in a harsh and inhospitable environment. The "lichen fields" of the Central Namib, which are recognized as an important plant area (IPA), play a key role in soil-crust formation, entangling the gravel surface along with cyanobacteria and green algae to form a protective layer resistant to wind and water erosion (Lalley 2007). This creates a habitat for burrowing insects, beetles, spiders, reptiles and small mammals. It is believed that there may be a link between the high rate of endemism of arthropods in the Namib Desert and the different local lichen-rich habitats. In addition, lichens also contribute to carbon and nitrogen cycling, and grass is known to readily sprout across lichen-rich areas of the Namib in years of exceptional rainfall (Lalley 2007).

1.4 Threats to Biodiversity

The ability of Namibia's various ecosystems to provide essential ecological services such as those provided by the lichens is being threatened across the country. This is particularly worrying, as the maintenance of healthy ecosystems is of crucial importance to Namibia given the high reliance of a large portion of the population on natural resource-based livelihoods. Agriculture, fisheries, nature-based tourism, and indigenous natural plant products are all important contributors to Namibia's economy that rely directly on healthy ecosystems for their sustainability.

Ecosystem services may be broken into four types:
I. Supporting services (soil development and conservation, nutrient cycling, primary production)
II. Regulating services (water regulation, climate regulation)
III. Provisional services (food, fuelwood, fibre, biochemicals, freshwater provision)
IV. Cultural services (alternative livelihoods, heritage, tourism)

These services are being impacted upon to varying extents in different locations in Namibia. The main threats to these services are outlined and analyzed below.

1.4.1 Unsustainable Water Uses

As the most arid country south of the Sahara, water is a scarce and precious resource and Namibia's unique biodiversity has adapted itself over centuries to adapt to this constraining factor. The country's only perennial rivers flow along its northern and southern borders. These are transboundary resources and are typically home to great biodiversity, for example the Orange River Mouth (Namibia) and Okavango delta (Botswana) are both Ramsar Wetland Sites of International Importance. The ephemeral rivers are of no less importance for biodiversity as they act as linear oases passing through otherwise arid areas and serving as sources of water and strips of vegetation, which allows for the survival of people and wildlife in these areas.

Large scale irrigation schemes being promoted by the MAWF along Namibia's northern rivers represent a considerable threat to biodiversity. The NDP3 document (2006) quotes that agriculture accounted for 74% of all water consumed in Namibia, while contributing just 7% to GDP in 2001/2. Irrigation schemes are a particularly high consumer of water and offer a relatively low value return in terms of N$per m^3 water used. The effects of large-scale water abstraction from these rivers could have serious impacts on biodiversity, while pollution from the use of pesticides and fertilizers is also a major concern. Similar concerns surround the possible development of bio-fuel plantations in the north-east of Namibia.

Other examples of localized impairments of water ecosystem services include increased deforestation and land degradation in the Cuvelai basin area and the possible contribution of this to the severe flooding events experienced in this region in recent years. The recharge rates of underground aquifers from epehemeral rivers are also of concern, as these are the main sources of water for the majority of the population. Dams for farming purposes and increased demand from expanding towns and mining activities are the main driving factors behind this threat.

1.4.2 Climate Change

Namibia has been recognized as being an extremely vulnerable country to the impacts of climate change. While just how climate change will affect Namibia is still not entirely clear, almost all models point to rainfall becoming even more variable in the country. Increased temperatures are also typically forecast. These factors alone will have a major impact on the country's biodiversity in terms of species distribution, composition and migration. A recent study forecasts the following effects:

- More frequent flooding of a greater magnitude in Namibia's northern rivers
- Reduced inflows into Etosha pan
- Loss of species in many areas – particularly the Succulent Karoo with local extinctions there by 2050
- Shift in Namibia's main vegetation types from grassy savannah to desert and arid shrubland by 2080 (SAIEA (in press))

It is also not yet predicted how the Benguela current system, and the associated coastal fog belt, will be affected by climate change. This fog belt is vital for most of the endemic and many of the other animal and plant species found in the Namib, and any changes in its frequency or extent will have major repercussions on these species.

1.4.3 Uncontrolled Mining and Prospecting

Namibia's two global biodiversity hotspots also happen to be home to vast amounts of mineral reserves. Diamonds have been mined for over a century in the Sperrgebiet, while there has recently been a uranium rush in the Central Namib area. Prospecting along the western escarpment in Kunene region is ongoing and copper mining is also a major industry in the ecologically sensitive area around Tsumeb.

The main threats from these activities are habitat loss and destruction. This is of particular concern to biodiversity as many endemic species are known to have very limited distribution ranges and are thus vulnerable to extiction through habitat destruction from drilling activities, infrastructure development and opencast mining practices among others. Mines are also large consumers of energy and water, both of which are in short supply in the Central Namib, Kunene and Sperrgebiet areas in particular. Threats from mining are also not confined to terrestrial biomes in Namibia. Most diamond mining is now conducted offshore on the south-west coast of Namibia, and the destruction of kelp beds and healthy reef areas as well as large scale disturbance and movement of sediment are considered major threats to biodiversity and economically valuable lobster sanctuaries (MFMR 2009).

1.4.4 Population Growth and Increased Consumption

Rural to urban migration is occurring on a large scale in Namibia. Urban areas such as those in the north-central regions, Windhoek as well as the coastal towns are experiencing high levels of economic growth and activity. Migrants are thus being attracted to these areas in search of better employment and education opportunities, and the possibility of an improved standard of life.

This has placed great pressure on ill-equipped local municipalities, which are unable to effectively provide the services needed to meet the increasing demands. The provision of adequate sanitation, waste management, mushrooming informal settlements and deforestation adjacent to urban areas are all major challenges, which have implications for biodiversity loss. A rapid increase in housing developments along the coast is another serious concern.

1.4.5 Unsustainable Land Management Practices

The decline in productivity of Namibia's rangelands, associated with unsustainable land management practices, is a major threat to biodiversity. It is estimated that the decline in carrying capacity of Namibia's rangelands could be 100% or more since the 1960s and that bush encroachment is costing farmers approximately N$1.4 billion per annum (mainly on commercial land) (CPP 2009). It is not only livestock that are affected, as bush encroached areas also typically constitute a form of habitat destruction for many plains game species and the globally threatened cheetah. The fencing off of land, the abandonment of herding practices and the suppression of fires are some of the factors thought to be driving bush encroachment.

Soil erosion, salinisation, deforestation and the replacement of perennial grasses with annual species represent other manifestations of land degradation in Namibia. These symptoms are particularly prevalent in communal areas, where overgrazing and overstocking are key drivers of land degradation. Population pressure, insecurity of land tenure and inadequate access to capital are among the root causes behind land degradation.

1.4.6 Alien Invasive Species

The denudation of soil associated with land degradation creates a favourable environment for colonization by invasive species such as *Prosopis spp*. These species can cause ecological problems in terms of:

- Loss of biodiversity, through competition and displacement of indigenous species
- Reduced stability and productivity of natural ecosystems
- Increase in human and animal diseases and allergies
- Reduction in soil and ground water and other natural resources
- Choked drainage lines and waterways
- Threat of extinction to indigenous species
- Hybridization and loss of genetic diversity

The threat of alien species in Namibia is being driven by unsustainable resource management practices, alien tree planting programmes by the directorate of forestry, sale of alien invasives through nurseries, increased aquaculture activities, and inadequate border controls.

1.4.7 Tourism and Recreation

Tourism is an industry overwhelmingly based on healthy ecosystems and biodiversity in Namibia. Tourists are mainly attracted to Namibia by its diverse and pristine landscapes, as well as its great opportunities for wildlife viewing in their natural habitats. Namibia has capitalized on this comparative advantage in recent years by pursuing a high value low impact approach to tourism development, which has contributed greatly to sustained growth in the sector.

However the increasing number of tourists has brought an increased range of tourist activities, some of which pose serious challenges to biodiversity at localized levels. Examples of these include quad biking, off-road driving, dolphin viewing and smallcale overfishing. These threats are typically particular to the coastal zone and the need to manage these threats has been recognized and is being addressed using an integrated approach.

1.4.8 Human Wildlife Conflict

While communities have come to appreciate the benefits that are to be gained from the sustainable use of wildlife, human wildlife conflict is emerging as a potentially serious problem, particularly in areas adjacent to protected areas. Damages to crops and essential infrastructure such as water points and power lines by elephants, as well as livestock mortalities caused by the increasing abundance of predators can understandably arouse the anger of local communities. Livelihoods are often at stake and there is a possibility than an increase in such instances could cause community hostility towards biodiversity conservation, particularly in the Kunene and Caprivi regions.

CHAPTER II. STATUS OF IMPLEMENTATION OF NAMIBIA'S NATIONAL BIODIVERSITY STRATEGY AND ACTION PLAN

2.1 Overview of Namibia's NBSAP

Namibia's National Biodiversity Strategy and Action Plan serves as the country's strategic plan of action for the period 2001-2010 to promote sustainable development through biodiversity conservation. It was borne out of Namibia's National Biodiversity Programme (NBP) (1994-2005) and was shaped by a wide variety of stakeholders including government ministries, research organizations, NGOs, private businesses and community-based organizations. A multi-sectoral National Biodiversity Task Force (BDTF), set up during the NBP coordinated the functioning of 21 technical working groups. These working groups provided much of the technical input into the formulation of the NBSAP, while senior ministry representatives provided political guidance through roundtable meetings and other direct forms of contact.

The overall objective of the NBSAP is to protect ecosystems, biological diversity and ecological processes through conservation and sustainable use, thereby supporting the livelihoods, self-reliance and quality of life of Namibians in perpetuity. It contains some 55 strategic aims to achieve its overall objective. These are grouped into 10 key strategic themes which include biodiversity conservation in priority areas, sustainable use of natural resources, research and environmental change monitoring, sustainable management of land, wetlands and marine environments, integrated planning, Namibia's international role, capacity building, and mechanisms for implementation.

The mainstreaming of biodiversity into policies, programmes and actions cuts across almost all of these key strategic themes but will nonetheless be separated as best as possible and analysed in more detail in Chapter III. The srategic objective of the NBSAP (No. VII: Integrated planning for biodiversity conservation) is the one of most relevance to mainstreaming and is thus analysed at the end of Chapter III. Capacity building and Namibia's international role (Strategic objectives VIII and IX in the NBSAP) cut across the different strategic themes of the NBSAP, and are not considered here as separate themes in their own right so as to avoid repetition. An analysis of the specific targets addressed in these thematic areas is nevertheless given in sections to allow for a complete overall assessment of the NBSAP.

2.2 Implementation of the NBSAP

2.2.1 Implementing Agents of the NBSAP

As with the formulation of the NBSAP, the MET has played the lead role in coordinating the implementation of the NBSAP. An indicative list of the key implementing agents for the NBSAP was identified in the NBSAP document and is built on here so that the list is more reflective of changes in policy and investment that have occurred since that time.

2.2.1.1 Government Institutions and Trade Unions

Government Ministries and Agencies: Ministry of Agriculture, Water and Forestry (MAWF); Ministry of Education; National Museum of Namibia; Ministry of Defence; Ministry of Finance; Ministry of Fisheries and Marine Resources (MFMR); Ministry of Lands and Resettlement (MLR); Ministry of Mines and Energy (MME); National Planning Commission (NPC); Ministry of Regional and Local Government, Housing and Rural Development (MRLGHRD); Ministry of Trade and Industry.

Research and Training/Tertiary Education Institutions: Etosha Ecological Research Institute; Gobabeb Training and Research Centre (joint initiative between the MET and Desert Research Foundation of Namibia (DRFN)); Polytechnic of Namibia; University of Namibia.
Unions and Parastatals: Namibia Agricultural Union; Namibia Eagle Traditional Healer's Association; Namibia National Farmer's Union; Namibia Traditional Healer's and Practitioner's Board; Namibia Water Corporation; Namibian Agronomic Board

2.2.1.2 Non-profit Organisations
Namibia has a very well-established network of NGOs, many of which are active in the areas of biodiversity conservation, sustainable use and the equitable distribution of benefits to communities. The ground-breaking work of NGOs such as the IRDNC in the 1980s in the north-west of Namibia laid the basis for the development of Namibia's communal conservancies. This long-standing support has built up a great level of trust between communities and NGOs, which is undoubtedly at the heart of the success of the communal conservancy programme. Some NGOs such as DRFN and NNF offer a very broad range of environmental expertise, while others such as CRIAA and CCF offer expertise in more specialized areas relating to biodiversity conservation and support to the development of natural product-based industries.

Civil society action groups are quite a new development in Namibia, but community-based organisations (CBOs) are becoming prominent in rural areas as agents of development and resource management. These have typically arisen out of Namibia's Action Programme to Combat Desertification (NAPCOD) and the close bonds between NGOs and communities, and they are now supported mainly through the CPP Programme (this will be discussed in further detail in section 2.3.3.4). A number of projects carried out in partnership with international scientific institutions, have also made important contributions particularly towards in-situ and ex-situ conservation. Some examples here include the Millennium Seed Bank Project (2001-2009) of the Kew Royal Botanical Gardens in the United Kingdom, and the BIOTA project, which links scientific institutions in Germany with countries all around the world through the German Federal Ministry for Education and Research in the interest of knowledge generation for improved biodiversity conservation.

The technical working groups set up during the NBP were also identified as key implementing agencies of the NBSAP and are thus included here. Many of these are no longer functional but some have played an important role in many diverse areas such as policy formulation, knowledge generation and storage and environmental monitoring. The working groups will be discussed in greater detail in section 2.4.

Non-Governmental Organisations: Centre for Research Information Africa Action (CRIAA); Cheetah Conservation Fund (CCF); Desert Research Foundation of Namibia (DRFN); Integrated Rural Development and Nature Conservation (IRDNC); Namibia Nature Foundation (NNF); Namibia Non-Governmental Organisation Forum; Namibian Association of CBNRM Support Organisations (NACSO); Working Group on Indigenous Minorities of Southern Africa; World Wildlife Fund; Save the Rhino Trust; Succulent Karoo Ecosystem Project; Conservancy Association of Namibia; Individual Experts and Consultancies; Civil Society Action Groups; International Scientific Collaborators.

Technical Working Groups: Agricultural Biodiversity, Alien Invasive Species, Awareness and Education, Biosystematics, BIOTA Liaison, Biotrade, Coastal and Marine Biodiversity, Environmental Observatories Network of Namibia, Finance Committee, Forest Biodiversity, Information Policy and Website, Land Use Management and Tenure Impacts, Mountain Ecosystems, Namibian Biotechnology Alliance, Restoration Ecology, Sperrgebiet, Terrestrial Biomes, Traditional Knowledge, Tree Atlas Project, Wetlands.

2.2.1.3 Global Environment Facility-funded Projects

The landscape of potential implementing agencies has changed greatly in Namibia since the formulation of the NBSAP in 2001 and the last National Report to the UNCBD in 2005. Namibia has been one of the most successful countries in Africa in attracting GEF-funded projects. The NBSAP document has played an important role in this regard, with many GEF-funded projects targeting specific priority areas of biodiversity conservation. It is estimated that the GEF has provided funding worth some US$35.5 million to national projects in Namibia, and just over US$22 million to regional projects involving Namibia (calculated from GEF-funded project documents relevant to Namibia up to 2009) Examples of some of the GEF-funded projects (focal areas: biodiversity, international waters, sustainable land management, and climate change) operational in Namibia are outlined below:

I. Strengthening the Protected Area Network (SPAN) Project in Namibia (2006-2012): Focuses on three broad intervention areas: 1) strengthening systemic capacity, namely the enabling legal/policy environment and financial mechanisms for the management of protected areas; 2) strengthening the institutional capacity for the management of protected areas; and 3) demonstrating new ways of the management of protected areas at four field demonstration sites. The project receives funding totaling US$8.55 million.

II. Integrated Management of the Benguela Current Large Marine Ecosystem (BCLME) Project (2002-): Assists the governments of Namibia, Angola and South Africa in managing their shared marine resources in an integrated way through cooperative management, scientific research and monitoring projects covering environmental variability, fish and fisheries, coastal zone management, pollution and ecosystem health, socio-economics and governance. A follow up project "BCLME Strategic Action Programme for Restoring Depleted Fisheries and Reducing Coastal Resources Degradation" was also approved by the GEF in 2008.

III. Strengthening Capacity Enhancement to Implement the Global Environmental Conventions in Namibia (CEGEM) Project (2009-2012): Focuses on the need to mainstream environmental management issues into national development programmes and to address the Rio Conventions on Climate Change, Biodiversity and Land Degradation in an integrated manner. This project receives US$260,000 through the GEF.

IV. Small Grants Programme (2003-): Provides support for conservation-based micro and small enterprises relating to the following six themes: Biodiversity, Climate change, Land degradation, International Water, Persistent Organic Pollutants, Climate change adaptation. The SGP has supported 87 projects thus far with a cumulative value of approximately N$20 million.

V. Country Pilot Partnership for Integrated Sustainable Land Management Programme(CPP-ISLM) (2008-2018): Serves as Namibia's National Action Plan to the United Nations Convention to Combat Desertification and its goal is to "Combat land degradation using integrated cross-sectoral approaches which enable Namibia to reach its MDG #7: "environmental sustainability" and to assure the integrity of dry land ecosystems and ecosystem services". The GEF provides funds worth US$10 million to this project.

VI. Namibian Coast Conservation and Management Project (NACOMA) (2005-2011): Objective is to strengthen the conservation, sustainable use and mainstreaming of biodiversity in coastal and marine ecosystems in Namibia.

VII. Integrated Community-Based Ecosystem Management Project (ICEMA) (2004-2011): Promotes community-based integrated ecosystem management that accrues socio-economic benefits to conservancies. It targets 16 conservancies within Namibia's larger framework of Community-Based Natural Resource Management (CBNRM) activities.

VIII. Barrier Removal to Namibian Renewable Energy Programme (2003-): Aims to improve the livelihoods and income generation opportunities of rural people by providing them access to off-grid solar energy technologies (for lighting, radio/TV, water pumping, small electric tools and refrigeration).

IX. Namibia Protected Landscape Conservation Areas (NAMPLACE) Project: A project proposal was submitted to the GEF in 2010 aiming to ensure that land uses in areas adjacent to existing protected areas are compatible with biodiversity conservation objectives, and to establish corridors to sustain the viability of wildlife populations.

2.2.1.4 Projects Emanating from Bilateral Agreements

Namibia has also been able to attract much-needed environmental support through bi-lateral agreements with a range of countries, but most notably through the governments of Germany and the USA, which both channel resources into key biodiversity-related areas such as natural resources management and rural development. This will be elucidated on in more detail in section 3.6.

External Funding Provider	Sector	Indicative Expenditure 2007/8 (N$)	Estimated Expenditure 2008/9 (N$)
1. Germany	Natural resource management and rural development, transport, promotion of the economy, capacity building, HIV and AIDS	831,996,149	351,938,449
2. USA	Education and training, environment, trade and rural development, good governance	812,291,830	1,240,531,400
3. France	Culture, rural development, education, health, agriculture and decentralization	286,212,277	286,212,277
4. Finland	Health, forestry, decentralization, institutional capacity-building	146,612,844	146,612,844
5. Spain	Fisheries, resettlement, health, rural water supply, education	62,703,453	31,599,342
6. Japan	Agriculture, education, transport, diplomacy and emergency support	54,304,236	140,667,884
7. Luxembourg	Education, rural development, water and sanitation	42,222,364	42,222,364
8. China	Education, agriculture, health, construction, capacity-building	25,656,540	157,291,086
9. Sweden	Development cooperation	16,500,000	16,500,000
10. Iceland	Fisheries, education and social projects	1,589,582	2,652,000
11. Netherlands	Good governance including human rights and peace-building	-	5,300,000
TOTAL		**2,294,196,827**	**2,838,977,646**

Table 4: ***Shows in order of value of indicative expenditure for 2007/8, the main providers of bilateral development assistance to Namibia in areas relating to biodiversity conservation*** **(Source: NPC 2008a).**

2.2.1.5 Private Sector Support

Namibia's large number of private game reserves as well the investment by many private companies in low-impact, high quality eco-tourism, also represent key elements of biodiversity conservation and the drive towards establishing conservation as a viable land use. Examples here include the 172,000 hectare NamibRand Nature Reserve, which provides far more jobs for a larger number of people (estimated at 100 in 2006) that could be employed in for example agriculture, and also generates far more income than other possible land uses in the area (Shaw 2006). The support from the tourism operator Wilderness Safaris to rhino conservation (particularly translocations and monitoring) is another example of how the private sector can add sustainability to conservation and local tourism development (!Uri-≠Khob *et al* 2009).

Corporate Social Responsibility programmes of local banks and mining companies have also provided much-needed funds and support to biodiversity conservation-related activities in recent times. Nedbank Namibia (Pty) Ltd. operates a "Go Green" environmental fund, which since its inception in 2001, has made grants worth N$3.2 million to 30 environmental projects (Nedbank 2009). The fund targets projects that:

- support the conservation, protection and wise management of sensitive habitats and indigenous plant and animal species
- improve understanding of indigenous species and natural ecosystems, particularly in respect of urgent conservation problems
- promote efficient and appropriate use of natural resources to support their sustainable long-term use

Namdeb, which mines diamonds in the sensitive Succulent Karoo ecosystem, is involved in a diverse range of conservation initiatives in the area. These include the support of research on vulnerable species in the area such as the Damara Tern and the Brown hyena, rehabilitation of degraded sites as well as clean up campaigns and biodiversity conservation activities at the Orange River Mouth Ramsar site. The Rössing Foundation also provides support to conservancies and biodiversity conservation activities in the Erongo and north-central regions.

2.2.2 NBSAP Mode of Implementation

The NBSAP lays out in logical framework format a detailed action plan as to how its strategic aims should be addressed. The framework includes key actions to be completed, and the lead agencies and key collaborators for each action as well as a timeframe, estimated cost and priority rating. It was thus well set-up for monitoring and evaluation. However the operationalization of the monitoring and evaluation framework was never set in motion, and the effectiveness of NBSAP's implementation has never formally been assessed until this report.

This report uses three main techniques to monitor and evaluate the effectiveness of NBSAP's implementation. Firstly a report of general progress assessment of its overall implementation is provided using a narrative account of progress made per each strategive objective area. In addition an assessment will be made based on written reports and stakeholder inputs as to whether specific targets laid out in the NBSAP were achieved, and the key challenges experienced per strategic aim. Stakeholder input is also used to assess the effectiveness of the NBSAP's implementation mode.

2.3 Achievement of Strategic NBSAP Objectives

2.3.1 NBSAP STRATEGIC OBJECTIVE I: Biodiversity Conservation in Priority Areas

2.3.1.1 Namibia's Protected Area Network

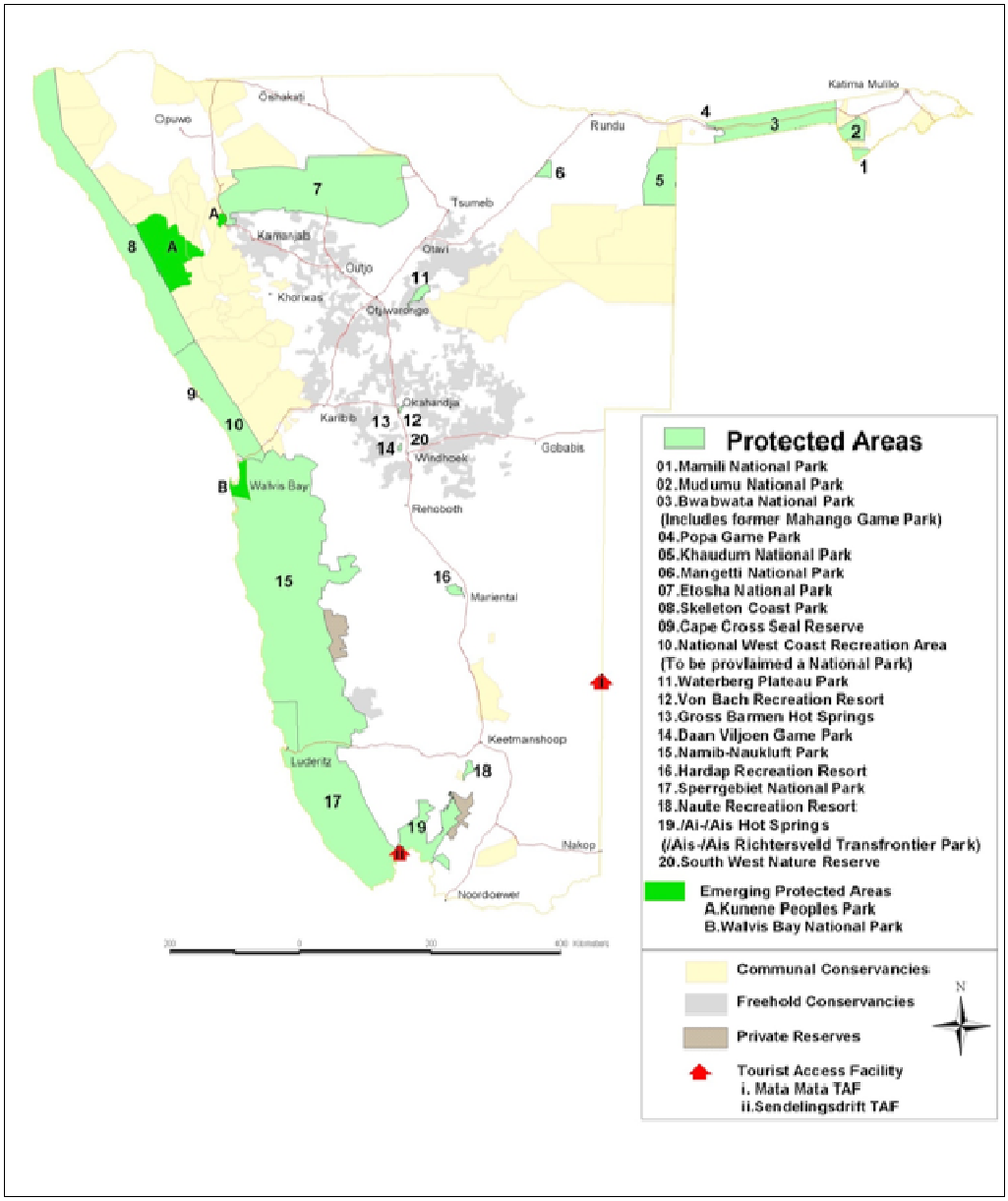


Fig 6: ***Map from 2009 showing the coverage of Namibia by the different forms of conservation management (Source: www.nacso.org.na)***

The map above gives a good idea of the current protected area network in Namibia. Approximately 40% of the Namibian land mass is currently under some form of conservation management and the following forms of conservation management and their representation can be distinguished:

- Protected areas on state land (national parks and game reserves): Covering an area totaling 17% (approximately 140,000km^2) of the country's land mass
- Communal Conservancies: These are areas in which communities in communal areas gain rights to use, manage and benefit from the consumptive and non-consumptive use of wildlife within defined boundaries. This process was enabled by legislation enacted in 1996 and these areas now cover another 17% of the country's land mass (see Fig 1 below)
- Freehold Wildlife Management Units: These cover 6.1% of the country and have been established by private landowners to dedicate their land to wildlife management for wildlife tourism, trophy hunting and the sale of live game and meat
- Tourism Concessions and Community Forests: These contribute another 1.3% to the country's protected area network. The essence of community forests is that communities gain rights to manage forests and associated natural resources.

It should be noted that Namibia's state-protected areas, although large in scale, were never fully representative of the country's biodiversity. Barnard (1998) described Namibia's protected area network as a legacy of ideological, sociological and veterinary factors without due consideration of biodiversity conservation requirements. The independence of Namibia in 1990, and the opportunities provided by its early ratification of the Rio Conventions has set in motion the process of making the protected area network more fully representative of these requirements.

Biome	**Communal Conservancy**	**Concession Area**	**Freehold Wildlife Management Unit**	**Community Forest**	**National Park**	**Total**	**Baseline (2005)***
Lakes and Salt Pans	0.7	0.0	0.0	0.0	96.8	**97.5**	**95.7**
Nama Karoo	14.6	1.4	1.0	0.0	5.0	**22.0**	**5**
Namib Desert	13.9	3.2	0.6	0.0	74.9	**92.5**	**69.4**
Succulent Karoo	0.0	0.0	0.0	0.0	90.5	**90.5**	**11**
Acacia Savanna	12.1	0.2	13.6	0.0	4.5	**30.4**	**4.5**
Broad-leafed Savanna	30.2	0.0	1.9	1.4	7.9	**41.5**	**7.8**
Total area of Namibia	**16.1**	**0.8**	**6.2**	**0.3**	**16.6**	**40.0**	

Table 5: ***Percentage of each biome under some some form of conservation protection*** **(Combined from information in MET (in press) and MET 2005) (*baseline is for state-protected areas only).**

This process has been achieved using an innovative and highly effective strategy. The NBSAP proposed in 2001 a provisional national target of at least 15% coverage by the protected area network of all vegetation types, with higher coverage recommended for Namibia's two globally significant biodiversity

hotspots. It also proposed that these figures could be modified based on a biodiversity area-prioritization analysis. Namibia has used a mix of conservation management approaches to shore up the conservation of its different biomes and vegetation types. The expansion of the state protected areas and communal conservancies have been notable achievements in recent years and have been used effectively to prioritise our two globally significant biodiversity hotspots.

Vegetation type	Total area found in the country - km²	% Coverage required	% Coverage by PAs as of 2009	Adequacy of Coverage
Caprivi floodplains	3 806	10	11	Adequate
Caprivi Mopane woodland	4 612	15	15	Adequate
Central desert	32 009	63	63	Adequate
Central Kalahari	60 813	5	0	Inadequate
Central-western escarpment and inselbergs	18 427	9	9	Adequate
Cuvelai drainage	14 773	5	<1	Inadequate
Desert.dwarf shrub transition	24 957	20	20	Adequate
Dwarf shrub savanna	65 543	4	2	Inadequate
Dwarf shrub savanna Kalahari transition	10 465	3	0	Inadequate
Eastern drainage	8 804	44	44	Adequate
Etosha Grassland and dwarf shrubland	2 247	86	86	Adequate
Highland shrubland	23 735	2	<1	Inadequate
Karas dwarf shrubland	66 188	4	<1	Inadequate
Karstveld	43 399	21	19	Inadequate
Mopane shrubland	6 785	47	47	Adequate
North-eastern Kalahari woodland	73 814	10	10	Adequate
Northern desert	20 821	66	66	Adequate
Northern Kalahari	66 352	4	<1	Inadequate
North-western escarpment and inselbergs	12 978	21	<1	Inadequate
Okavango valley	1 498	7	<1	Inadequate
Omatako drainage	1 822	0	0	Adequate
Pans	5 443	96	96	Adequate
Riverine woodlands and islands	348	44	46	Adequate
Southern desert	47 204	88	88	Adequate
Succulent steppe	20 225	90	90	Adequate
Southern Kalahari	57 761	3	0	Inadequate
Thornbush shrubland	42 370	3	<1	Inadequate
Western highlands	70 482	50	50	Adequate
Western Kalahari	15 977	21	21	Adequate

Table 6: ***Area and percentage of each vegetation zone under conservation and an assessment of whether this is adequate or otherwise*** **(Source: MET (in press)).**

2.3.1.2 Expansion of the State Protected Area Network

The most significant achievement in the past few years with regard to the expansion of the state protected area network has been the proclamation of the Sperrgebiet National Park in 2008, which added a further 3% to the state protected area network. The Sperrgebiet covers an area of approximately 22,000km^2 and almost the entire Namibian proportion of the Succulent Karoo biome (SPAN 2008a). It is a unique area that was sealed off from the public since 1908 for the purpose of diamond prospecting after diamonds were found there in the late 1800s. Fortunately only 0.73% of the Sperrgebiet has been disturbed by mining activities and the tightly restricted access to the area over the past 100 years has maintained the pristine nature of the park.

The Sperrgebiet is one of the most important conservation areas in the world. The Succulent Karoo Ecosystem, which the Sperrgebiet covers, has the highest diversity of succulent flora globally. Over 10,000 plant species have been identified in this ecosystem including 1,954 endemic plant species (SPAN 2008a). Research up to now has shown that the Sperrgebiet itself contains (from SPAN 2008a):

- About 1,050 plant species representing 25% of the entire flora of Namibia on just 3% of the country's land surface
- 56 different vegetation types
- 35 coastal and marine bird species, 60 wetland bird species, and 120 terrestrial bird species
- 80 terrestrial and 38 marine mammal species including an estimated 600,000 cape fur seals or 50% of the world's population
- 100 reptile species and 16 frog species
- A great number of insects and other invertebrates, of which probably 90% are undescribed by science
- A Marine Protected Area covering 13 offshore islands and islets

In addition the proclamation of the Sperrgebiet has paved the way for the consolidation of the entire coastal zone into one new national park. This monumental step forward has been completed with the upgrading of the National West Coast Recreation Area (see No. 10 in Figure 6) to national park status in 2010. This conservation area is now known as the Dorob National Park. Namibia is now the only continental country in the world to have the entirety of this unique coastline protected as a national park, which serves as the sixth largest terrestrial protected area in the world and the largest in Africa covering 107,540km^2 (Tarr 2009).

2.3.1.3 Improved Management of Protected Areas

In order to maximise the potential of Namibia's protected areas, an assessment of the management effectiveness of these areas has been undertaken comparing data from 2004 and 2009. The World Bank/World Wildlife Fund's Management Effectiveness Tracking Tool was used with slight modifications to suit Namibia's local conditions (NAMETT). A report has been produced and facilitated by the SPAN Project.

The report shows significant improvement in the management of all but one of the 19 park stations assessed. The scores found by the report for each protected area are shown below and are based on the analysis of a number of criteria determined using questionnaires including the drafting of regular work plans; research; resource management; staff numbers; staff training; equipment; education and awareness programmes; traditional authority involvement; economic benefits to communities; monitoring and evaluation; management plans; protected area objectives; budget; maintenance of equipment; fees; condition assessment; and law enforcement.

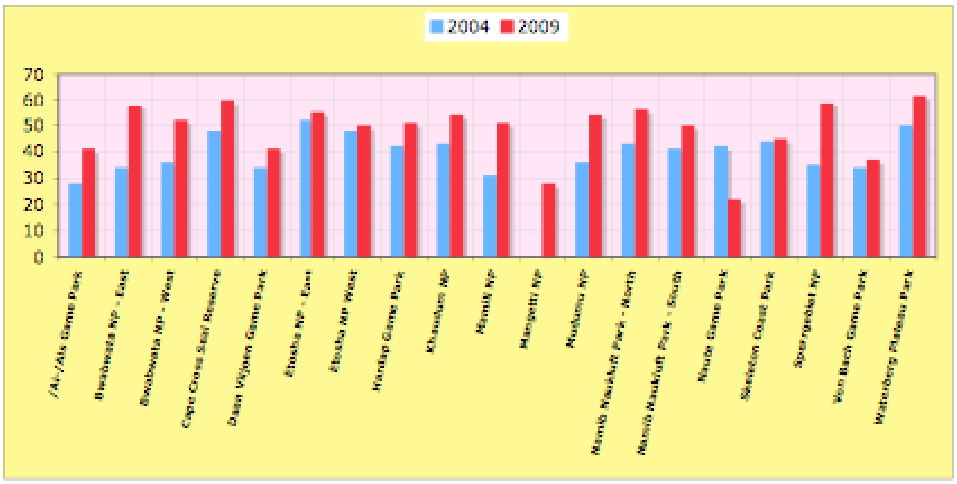


Fig 7: ***NAMETT assessment scores for protected areas in 2004 and 2009 (Source: SPAN 2009).***

The METT is further divided into categories of management effectiveness with high >50, intermediate 40-49 and low <40. The 2009 assessment shows that major improvements have occurred with five park stations moving from low to high status, and one moving to intermediary. Only one remained low along with the newly assessed Mangetti National Park. Most parks classified as intermediate moved to the high category except for two parks – one remained intermediate while one dropped to the low category. The two parks previously in the high category retained their grading.

2.3.1.4 The Expansion of Conservancies

Both private and communal conservancies contribute greatly to the protected area network in Namibia, where over 90% of large mammals occur outside state-protected areas (Turpie *et al* 2010). Rights over wildlife were granted to private farmers in 1967, and numbers of large mammals are estimated to have increased by some 70% and species diversity by 44% since then (Turpie *et al* 2010). Freehold wildlife management areas now cover an impressive 13.1% of the Acacia Savannah Biome, which is the main home of the largest cheetah population in the world.This has also been an important step in combating the problem of bush encroachment and promotes the management of wildlife as a diversification strategy. Namibia's plain game species are much better adapted to this biome than the prevailing livestock, which are heavy consumers of water and perennial grasses. It should nevertheless be noted that the coverage of land by Namibia's freehold wildlife management units is below targets laid out by the Millennium Development Goals (MDGs) (NPC 2008b).

Similar rights for communities in communal land over wildlife were granted in 1996, which created the blueprint for the formation of communal conservancies. The growth in communal conservancies has since been rapid and they represent a very important addition to the protected area network as they are predominantly located in the sensitive Namib escarpment zone and the species-rich north-eastern part of the country.

As of March 2010, there were 59 registered conservancies in Namibia covering some 12 million ha with 42 of those located immediately adjacent to protected areas or in the corridors between them (Turpie *et*

al 2010b). This has created opportunities for ecological and economical linkages as well as for collaborative management options between the respective conservancies and state protected areas such as Etosha, Khaudum, Bwabwata, Mudumu and Mamili National Parks.

2.3.1.5 Collaborative Management Initiatives

The MET is using the proximity of communal conservancies, concessions and freehold management units to state-protected areas as a basis for the collaborative management of what have in effect become larger and more integrated protected areas. It has set about bringing together governmental agencies, the local community and other stakeholders to co-manage these areas. Collaborative groups have been established for the Mudumu North Complex (MNC), Mudumu South Complex, the Bwabwata Technical Committee in the Caprivi Region and the Khaudum North Complex in the Kavango Region. An intensive consultation process is also underway to develop the Kunene National Park, which will link Etosha National Park with the Skeleton Coast National Park through the existing network of communal conservancies and concessions that lie in between.

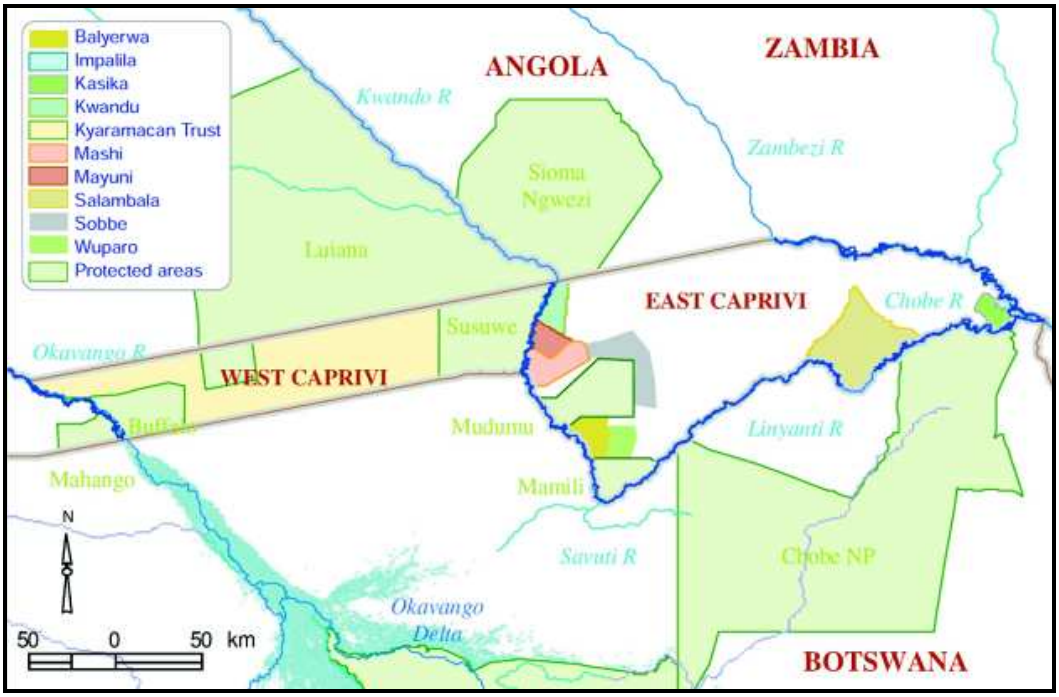


Fig 8: ***The immediate environment of the Mudumu North Complex shows shows excellent potential for the integrated management of wildlife and natural resources between conservancies and national parks as well as between countries (Source: NNF 2009).***

Case Study 1: The Mudumu North Complex (MNC)

The MNC was formed in 2005 as a joint management forum to co-manage some 4,500km^2 of land either side of the Kwando or Linyanti River (Martin 2007). The forum comprises of representatives from the MET; Kwando, Mayuni, Sobbe and Mashi conservancies; three community forests; traditional authorities; and other line ministries. The NGO Integrated Rural Development and Nature Conservation (IRDNC) serves as secretariat to the management committee (Sikopo and Paxton 2008). The MNC also

borders three other countries namely Botswana, Angola and Zambia and is thus well-suited to transboundary conservation initiatives

The forum collaborates on issues relating to wildlife and natural resource management including human wildlife conflict; law enforcement; fire management; community awareness; reintroduction of wildlife species; and land use zonation. The MNC joint management forum is comprised of 3 main groups:

- Reference Group responsible for the strategic direction of the MNC
- Doing Group for implementing agreed strategic activities
- Technical Group to assist the doing group as required comprised of line ministries and support agencies (SPAN 2008b)

2.3.1.6 Addressing the needs of endemic and threatened species

Case Study 2: Black-faced Impala (*Aepyceros melampus petersi*)

The black-faced impala is an arid-adapted antelope endemic to Namibia with great ecological and economic value. It is classified in the IUCN Red Data Book as vulnerable with a population of less than 4,000 in the wild (Matson 2007). A management strategy for black-faced impala has been drafted aiming to enhance the distribution and abundance of the species in Namibia. The vision of the management plan is to re-establish black-faced impala as a distinct, valuable subspecies in viable breeding populations in Namibia. It also recommends the removal of common impala and hybrids from the core area as hybridization is a real threat to maintaining the genetic integrity of the black-faced impala. As part of this management plan, the black-faced impala have been translocated to five conservancies in their former range.

Case Study 3: Damara Tern (*Sterna balanaerum*)

The Damara Tern is an endemic bird species to Namibia, which breeds along the harsh coastal zone. It breeds in the Namib dune belts, salt pans and gravel plains in summer time and its offspring are particularly vulnerable to predators, popular tourism activities such as quad biking and off-road driving, as well as habitat destruction through increasing mining activities. However a programme initiated to create awareness of the dwindling numbers of Damara terns has led to concrete action aimed at protecting the threatened breeding sites of the bird. The following successes have been achieved:

- Breeding areas of the Damara Tern in the dune belt have been fenced off and people (and quad bikes) have been prohibited from entering the areas
- Namdeb funded a two year monitoring project on the impacts of diamond mining on the breeding productivity of the Damara Tern within the Sperrgebiet
- Over 2000 individual terns have been ringed to inform researchers on migration patterns, whether pairs are monogamous and whether they come back to breed in the same areas amongst others (Braby 2009)

Case Study 4: Heaviside's dolphin (*Cephalorhynchus heavisidii*)

Heaviside's dolphins are endemic to the Benguela ecosystem. It was listed as a data deficient species by the 1996 IUCN (MFMR 2009). The collection of baseline data on heavisides, as well as other cetaceans, in terms of their abundance, distribution and habitat use in Namibian waters has begun under the Namibia Dolphin Project (Elwen and Leeney 2009). This is essential for the evaluation of the conservation status of these populations as well as their role in the ecosystem. Some of the conservation concerns affecting these species are also being explored including the coastal development and port expansion at Walvis Bay, the large marine eco-tourism industry in the Walvis Bay area and the effects of the growing mariculture industry.

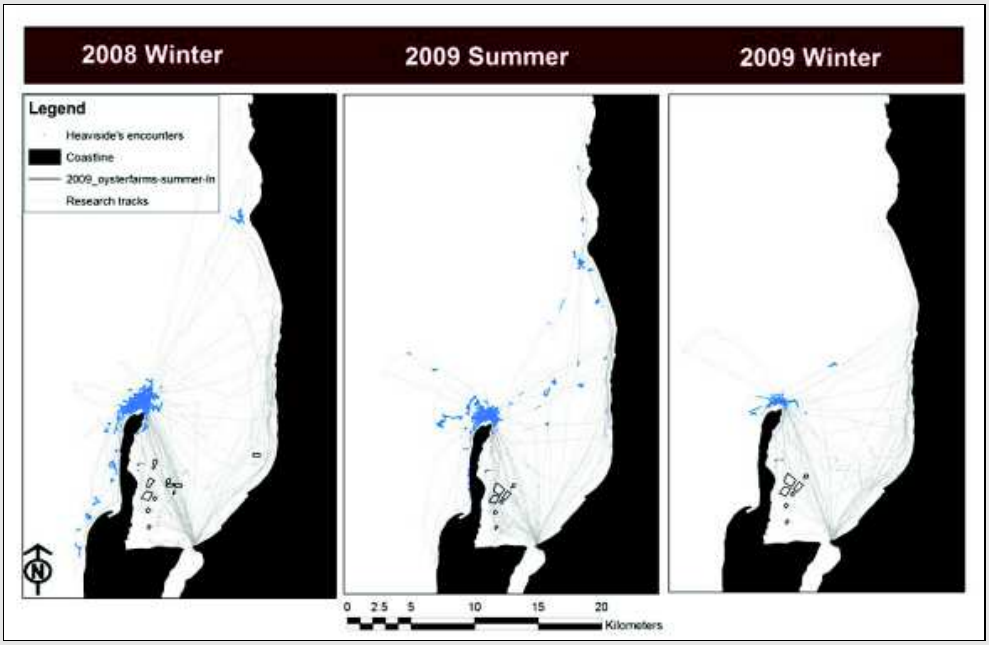


Fig 9: ***Preliminary data from the Namibia Dolphin Project showing the distribution of Heaviside's dolphins in the Walvis Bay area*** **(Source Elwen and Leeney 2009).**

Data from photo-identification methods and static acoustic monitoring has been collected from three seasons, 2008 winter, 2009 summer and 2009 winter from the Walvis Bay area (primary site) and Lüderitz. Preliminary results estimate a population of 505 heaviside's dolphins, while seasonal movement patterns have also been identified. The high number of tour boats in the Walvis Bay area has been identified as a major concern as other studies have shown the negative effects of boat-based tourism on cetaceans. The project is still at an early stage and further research is required to build up a long-term inventory of information.

Case Study 5: Elephant's Foot (*Adenia pechueli*) and Stone Plants (*Lithops reuschorium*)

Elephant's Foot and Stone Plants have been identified as endemic and near-endemic species with both mainly limited in distribution to the sensitive Namib escarpment zone. A project running from 2006-2008 was carried out to compile a national survey of these species (MAWF 2006). The project was a partnership composed of the National Botanical Research Institute (NBRI), Rössing Uranium Limited, Rio Tinto and the Royal Botanical Gardens in the United Kingdom. The primary reason for the involvement of Rössing was for them to identify the proportion of the national populations of these species occurring within its licence area. The higher the proportion, the greater Rössing's responsibility will be to protect these plants.

The survey was conducted using GPS coordinates to record the location and altitude of populations, as well as habitat data including aspect, gradient, lithology, soil type and associated vegetation. Where a large population of *Adenia* was encountered, 100 plants were marked with metal tags to allow future monitoring (in the case of *Lithops*, a 10x10 monitoring square is erected around part of the population for long-term monitoring).

Preliminary results showed the largest number of individuals of A. pechuelii was found at a site called Leeukop in the Namib-Naukluft National Park. It was noted that Adenia plants appear to have an affinity to granites with uranium deposits. The Lithops population surveyed in the Rössing licence area was found to be the largest encountered to date (MAWF 2006). Mining activities, especially those resulting in habitat destruction, were identified as the main threat to these species with drastic measures required to prevent their future decline.

2.3.1.7 In-situ and Ex-situ conservation

The ongoing expansion of Namibia's protected area, and the improved management effectiveness of state-protected areas, has undoubtedly boosted the in-situ conservation of flora and fauna in Namibia. This is particularly true given the protected status of globally important biodiversity hotspots such as the Sperrgebiet in the Succulent Karoo biome.

In terms of ex-situ plant conservation, the National Plants Genetic Resources Centre (NPGRC) of the National Botanical Research Institute (NBRI) collects seeds of both wild and cultivated indigenous plants. The germplasm collection stands at 3600 accessions of which 1822 are of crop species and 1778 of indigenous plants (Kolberg 2008). Other activities of the NPGRC include description of plant traits of each seed sample, periodic germination tests, documentation of all information from collection to storage and distribution of seeds to bona fide requesters. The NPGRC benefits from membership of the SADC Plant Genetic Resources Centre (SPGRC) network, which supports Namibia's national plant genetic resources for food and agriculture programme. This network was originally funded from the Nordic countries but is now fully funded by SADC member states.

Crop / Species	**No of accessions in 1995**	**No of accessions in 2008**	**% increase since 1995**
pearl millet (*Pennisetum glaucum*)	921	1441	56
sorghum (*Sorghum bicolor*)	124	134	8
cowpea (*Vigna unguiculata*)	8	58	625
bambara groundnut (*Vigna subterranea*)	38	55	45
groundnut (*Arachis hypogaea*)	18	29	61
maize (*Zea mays*)	0	11	100
pumpkin (*Cucurbita* spp.)	0	13	100
melon (*Citrullus lanatus*)	54	98	81
wild species	575	1761	206
TOTAL	**1738**	**3600**	**107**

Table 7: *Change in number of accessions stored at NPGRC since 1995* (Kolberg 2008)

The Millennium Seed Bank Project (MSBP) (2001-2010), a partnership between the NBRI and the Royal Botanical Gardens in the United Kingdom, has complemented the work of the NPGRC and has made good progress in addressing seed conservation in Namibia. One of the objectives of the MSBP was the collection and storage of seed, herbarium specimens and data of threatened, rare, endemic and useful

indigenous plants. Progress made during the MSBP is presented in the table below. Strohbach (*pers comm* 2010) estimates that 7% of all plant species in Namibia have been collected. A further phase of the MSBP is currently being negotiated that would target to take this to 25% over the next 10 years.

	2001	2002	2003	2004	2005	2006	2007	2008	2009
Total seed collections	45	67	14	62	182	207	147	137	133
Threatened	0	1	1	0	2	4	1	1	0
Endemic or near-endemic	15	51	6	46	151	170	97	115	38
Useful	12	9	4	12	19	18	20	12	24
Total target spp.	27	61	11	58	172	192	118	128	62
% of target spp.	60	91	79	94	95	93	80	93	47

Table 8: ***Target species collected for each category under the MSBP. Note: some species may fall into more than one category. Species were listed for only one category (Source: Kolberg 2009).***

NBSAP Strategic Objective I: Conservation of biodiversity in priority areas

Outcome 1.1
Specific gaps in the protected area network are identified and filled

Progress

- The proclamation of the Sperrgebiet National Park in 2008 has put the entire Namibian portion of the "biodiversity hotspot" Succulent Karoo biome under protection
- The expansion of communal conservancies in the Kunene and Erongo regions has placed a considerable amount of Namibia's other global biodiversity hotspot, the Namib escarpment, under conservation
- The Bwabwata and Mangetti National Parks were proclaimed in 2007 and 2008. Both parks are characterized by Kalahari woodland and scrub vegetation, which are listed as conservation priorities by the IUCN.
- The entire coastal area of Namibia is now under the highest form of conservation status
- Namibia's first marine protected area was proclaimed in July 2009 covering 12,000km^2 (MFMR 2009)

Achievement of Specific Targets (fully achieved = ✓, partially achieved = ➲ , not achieved = ✗)

- Fine-scale proritisation of terrestrial, freshwater and marine biodiversity areas completed ➲
- First overview of the main land use and management systems published ✓
- Consultative report produced on management goals, practices and capacity needs in the current state protected area network ✓
- 24 state park management staff trained in effective management techniques and management planning ✓
- National overview of potential land uses and conservation opportunities generated ➲
- Provisional Target (to be modified through system area-prioritization): At least 15% representation of all vegetation types, and 30% of the globally-valuable Sperrgebiet and Namib escarpment in the protected area network ➲

Challenges

- Some vegetation types still inadequately represented in the protected area network, such as the Central Kalahari, North-Western Escarpment and Inselbergs, and the Okavango Valley.
- Lack of awareness of the importance of protected areas to Namibia's economy
- Conservation of indigenous plants inside national reserves is not given enough priority
- Uncontrolled mining and prospecting activities in protected areas
- Small size and isolation of some protected areas, which leads to fragmentation of wildlife populations

Outcome 1.2

Freehold and Communal conservancies are promoted and supported

Progress

- 59 Communal conservancies in Namibia covering 17% of the country as of March 2010 (Turpie *et al* 2010a)
- Freehold wildlife management units cover 6.2% of Namibia (MET in press)
- Communal conservancies receiving support from MET, projects and NACSO in diverse areas such as financial management, game reintroductions, monitoring and computer training
- A new generation of Integrated Regional Land Use Plans being developed, starting with Karas, which take into account conservancies and community forests as viable land use alternatives

Achievement of Specific Targets

- Integrated landscape planning in all of Namibia's political regions, where appropriate involving conservancies ➲
- Detailed recommendations to communities and government on additional areas for potential conservancy development ➲
- Scientific assessment of the contribution of conservancies to biodiversity conservation in at least 60% of Namibia's relevant ecosystems ✗

Challenges

- Inadequate local capacity to effectively manage communal conservancies and shortages in capacity of supporting organizations given the rapid expansion of communal conservancies and community forests
- Increasing instances of human wildlife conflict, particularly in communal areas
- Some challenges in conservancy governance have been experienced, such as in the effective management of increasing revenues
- Mainstreaming acceptance of communal conservancies and community forests as agents of economic, environmental and social development
- Growth of freehold wildlife management units has been below set targets, which needs to be addressed

Outcome 1.3
Conservation measures in and outside protected areas are strengthened

Progress

- A sustainable financing plan has been developed for Namibia's protected area system
- MET contributed N$136.7 million for protected area management for the 2009/10 financial year, 3 times more than that for 2004/5 (Turpie *et al* 2010b)
- Almost all of Namibia's national parks are showing improved management performance based on the NAMETT
- Collaborative management approaches have been developed in a number of areas to improved connectivity between conservancies, community forests, concessions, private reserves and state-protected areas
- The Ecosystem approach is being facilitated by the national CBNRM programme and in the fisheries sector with support from the BCLME programme
- Translocations of wildlife to communal conservancies (in their previous historic ranges) and Namibia's Wildlife Breeding Stock Loan Scheme (founder populations of common game species such as plains zebra, mountain zebra, eland, springbok, ostrich and oryx are provided to emerging indigenous farmers) are examples of 2 supporting programmes to livelihood diversification, biodiversity conservation and rare species management in and outside of the state-protected area network
- Projects and programmes such as BIOTA and the CPP are actively promoting biodiversity conservation practices outside of conservancies and state-protected areas**.** For example integrated sustainable land management activities are being implemented through the CPP in 37 pilot sites (mostly outside of protected areas) covering an area of some 47,000km^2 (CPP Annual Report 2009)
- Techniques such as radio collaring, GPS tracking and camera traps have been introduced in conservancies and national parks to enhance monitoring programmes

Achievement of Specific Targets

- A rigorous, internationally peer-reviewed and published biodiversity conservation evaluation of representative areas in all major categories ➲

- Full national capacity to provide adequate, regular and reliable scientific guidance to natural resource managers in 100% of conservation areas ➲

Challenges

- High personnel and transport costs required for the effective management of protected areas
- Need for more systematic wildlife research in national parks, which is being addressed through MET's restructuring programme
- Access to technical support is an important need for communities to benefit from the sustaianable use of their resources

Outcome 1.4
Needs of endemic and threatened species are addressed

Progress

- Management Plans for a number of Namibia's endemic and threatened fauna species have been developed
- Populations of endemic and threatened species are increasing in Namibia such as the black rhino and cheetah. Namibia is home to the world's largest and only free roaming population of black rhino, and the world's largest population of cheetah
- Plans and action groups have been set up for a number of threatened bird species, such as The Namibia Crane Action Plan and the Birds of Prey Action Plan and Working Group

Achievement of Specific Targets

- Peer-reviewed red data lists for all major animals ➲
- Peer-reviewed red data lists for all major plant taxa ✓
- Peer-reviewed draft management or recovery plans available and implementation underway for top 10 priority species by 2004 and top 50% priority species by 2006 ➲

Challenges

- Little has been done to protect the African Wild Dog, which is the most threatened mammal species in Namibia. The MET and partners are only now initiating the development of wild dog regional and national conservation strategies
- Increasing overall numbers of wildlife and increasing human population growth is leading to more cases of human wildlife conflict
- No management plans have been made for plant species, however efforts have been made to control the utilization some valuable plants such as devil's claw and hoodia through the MET's permit system. Main constraint is the manpower and resources needed to assess and monitor populations of plant species
- Lack of awareness among the general public of the significance of biodiversity loss

Outcome 1.5
Strengthen ex-situ and in-situ conservation capacity

Progress

- The establishment of the SPAN project has given great impetus to increasing the protected area network and improving the in-situ management of flora and fauna in state-protected areas
- Degraded habitats have started to be restored, particularly in the sensitive Succulent Karoo biome
- Locally extinct species have been relocated to their natural habitats through translocations (giraffe, eland and blue wildebeest in Caprivi, and red hartebeest in communal conservancies in the Erongo, Kunene and Otjozondjupa regions
- Approximately 7% of the seed of all Namibia's plant species has been collected (Strohbach pers. comm.), and the NPGRC and MSBP have combined well to improve ex-situ collection of plant resources in Namibia
- The MAWF in conjunction with UNAM has invested in the establishment of a gene bank, biotechnology and tissue culture laboratories, as well as plant breeding and seed technology facilities at the Ogongo campus in Northern Namibia
- New project underway through the NBRI to document farmers' crop conservation practices through a participatory methodology in the Oshana region

- Indigenous breeds of cattle and goats are being promoted in Northern Namibia as part of a climate change adaptation sub-project of the CPP

Achievement of Specific Targets

- Effective implementation and full government financing of existing national action plans for ex-situ genetic resources conservation ➲
- 50% of germplasm of use to Namibian local land races and indigenous wild species characterized ➲

Challenges

- Limited financial and human resource capacity available for research activities
- Large number of institutions involved
- Captive keeping facilities need to be coordinated and well-managed

2.3.2 NBSAP STRATEGIC OBJECTIVE II: Sustainable Use of Natural Resources

The establishment of conservancies has set in motion a process, whereby rights over natural resources are increasingly being devolved to communities. The Forestry Act of 2001 has laid the basis for the formulation of community forests, which now cover over 1.6 million hectares of Namibia (Arnold and Ries 2009). The Water Resources Management Act of 2004 has meanwhile paved the way for Integrated Water Resources Management (IWRM) and the establishment of basin management committees.

The formation of community management bodies such as conservancy committees and water point committees has provided a useful institutional platform for members to come together and exchange ideas and to capitalise on innovative income-generating opportunities, which are also environmentally sustainable. These typically centre on indigenous resources (including plants and wildlife), which are well-adapted to the harshness of the Namibian climate and for which there is typically much traditional knowledge. Innovative supporting facilities such as the CPP's innovative grants mechanism and the Small Grants Programme have meanwhile given considerable support to rural enterprises outside of conservancies, with sustainable utilisation serving as a guiding principle.

Namibia's legacy of apartheid and unsustainable resource use is most clearly evident in its fisheries sector, where species such as sardines were fished to almost extinction. This has taught independent Namibia a valuable lesson about the need for the sustainable management of this industry and the MFMR takes the lead responsibility for ensuring this.

2.3.2.1 Water Resources Management

Water is the most constraining resource in Namibia, and its sustainable management is key to ensuring the sustainable development and ecological integrity of the country. The basin management approach has begun to be implemented in Namibia to best achieve this, based largely on the promulgation of the Water Resources Management Act of 2004. This approach promotes the management of water resources on hydrological boundaries and seeks to take into account all of the factors- physical, climatic, ecological and human- that affect the quantity and quality of the resource.

Three basin management committees have been established so far in Namibia, and activities towards the establishment of three more are currently ongoing. Each management committee is comprised of a diverse range of stakeholders. Experience from the Orange and Fish River Basin Management has shown the linkages between inappropriate water management and threats to biodiversity. The committee has already identified a number of key problems. Increases in alien invasive vegetation were found to be reducing the biological diversity and productivity of the land while also raising concerns of groundwater

depletion in the Orange River Basin, while increasing flood damage was highlighting shortcomings in land use planning.

Some challenges identified so far have been that political decentralization and basin management committees are not well aligned, which made their integration difficult, while limited technical and management capacity at basin level exists in Namibia. Nevertheless the establishment of basin management committees has led to the greater empowerment of stakeholders in that they now have more access to information and have begun talking to each other given the existence of a forum for voicing and discussing their concerns. This has the potential to contribute to problem identification and improved planning and decision-making, which should ultimately lead to improved water management and biodiversity conservation.

2.3.2.2 Plants and Forest Products

Namibia's diverse ecosystems and habitats are home to a wide variety of unusual plants, trees, animals, fungi and micro-organisms. They are also home to a multi-cultural society with a high level of traditional knowledge about wild foods and medicinal plants and the many applications of these products. These factors have driven Namibia to make efforts to:

- Develop an industry around the sustainable supply and trade of indigenous natural plant products
- And to benefit from exploratory activities that aim to identify genetic resource components and information on associated traditional knowledge with potential for commercial use in the biotechnology, pharmaceutical, agro-chemical and cosmetic industries.

Two inter-institutional organizations have driven this process and real benefits from the sustainable utilization of resources are now beginning to accrue to communities. While Namibia has been at the forefront of international negotiations on ABS, its own ABS legislation, which has been under development since 1998, has been stalled until after the International Regime ABS negotiations in Japan in October 2010. An Interim Bio-prospecting Committee (IBPC) was set up in 2007 to facilitate access to Namibia's genetic resources and traditional knowledge until the international and national legislative frameworks are finalized.

In addition to the IBPC, the Indigenous Plant Products Task Team (IPTT), seeks to build on the traditional knowledge of communities and to explore possible new market opportunities as a means to develop the indigenous natural products industry in Namibia. The IPTT has developed and co-ordinated the implementation of a national strategy for the promotion of indigenous natural products in Namibia. To this end, an agreed Strategy and Action Plan is in place with implementation guided by flexible, market-driven responses. It is a government-mandated, multi-stakeholder forum whose overall objective is to promote the sustainable utilization of Namibia's indigenous plant resources for:

- greater household food security
- agricultural diversification
- income, employment and livelihood opportunities
- agro-industrial development

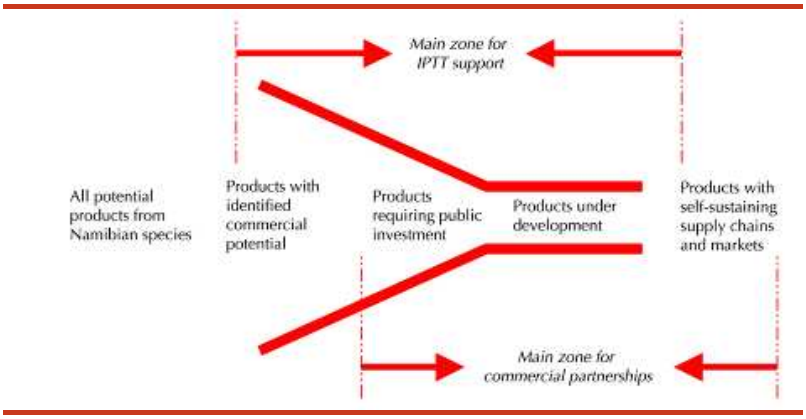


Fig 10: ***The IPTT's pipeline approach to indigenous plant product development*** **(Source: Drews *et al* 2008)**

In order to facilitate and co-ordinate the selection of resources for development the IPTT adopts a "pipeline" approach in which resources with product development potential are prioritized. This flexible approach has allowed the IPTT to allocate its limited funds and expertise to those resources and products requiring financial and/or technical support to move their development forward. This approach is supporting the research and development of a number of products derived from indigenous plant resources involving resource owners, traditional use knowledge holders, academics and service providers amongst others. The IPTT also identifies potential technical partners to support research and product development.

This approach has brought four indigenous Namibian plant oils to the international market (marula oil, Kalahari melon seed oil, ximenia oil and manketti oil, while several other products are at various stages of development (!nara oil; mopane essential oil; marula food oil, juice and fruit pulp; commiphora resin; devil's claw; hoodia; terminalia root bark; manketti fruit; and makalani fruit). Some specific examples of how the sustainable use and conservation of nature can facilitate fairer access to resources and equitable benefit-sharing, and integrate traditional harvesters into the wider economy are given below.

Case Study 6: Commiphora Resin (*Commiphora wildii*)

The commiphora plant is found mainly in remote parts of the Kunene region. Resin from the plant is traditionally used as a perfume ingredient by the local Ovahimba people. Commercial harvesting of commiphora began in 2007 and is conducted through the conservancies in the region. Harvesting methods are 100% sustainable as the resin is naturally exuded from the branches in response to increasing temperatures during spring. It is then simply collected from the branches or from the ground. Over 6000kg of commiphora was harvested in 2009, mostly by women (MET in press).

A historic first-ever ABS agreement for *commiphora wildii* was signed in April 2010 between the Kunene Commiphora Conservancies Association and the South African company Afriplex Ltd. The agreement commits both parties to utilize the resource in a sustainable way for the economic and social benefit of members of the association. The agreement is binding for five years, and Afriplex has committed to pay out per kg for the resin including a fee of per kg for the traditional knowledge value and conservation efforts of the association. This represents a considerable source of income for the local community in an area where viable livelihood diversification options are at a premium.

Case Study 7: Devil's Claw (*Harpagophytum procumbens and Harpagophytum zeyheri*)
Devil's claw is one of the most well-known indigenous plants in Namibia. It has been harvested and exported from Namibia for over 50 years and has been a protected plant since 1977 with permits required to control its harvesting, purchasing and export. Over the past 15 years Namibia has typically supplied around 90% of the global demand for devil's claw (MET 2010). Most of Namibia's devil's claw is harvested in communal areas and exported as dried, unprocessed slices or in the form of capsules, tea and powder as a treatment for rheumatism and arthritis. It is exported mainly to Germany.

Recent increases in demand for devil's claw products has led to fears about increasing practices of unsustainable harvesting. The MET has responded to this threat by revising its devil's claw to tighten the control mechanism over the management and trade of devil's claw products. The promotion of value addition, close monitoring of its utilization and sustainable harvesting are other key aims of the policy.

Devil's claw tubers grow underground and for sustainability of harvesting it is important that only a few of the side tubers area harvested at a time and that the main tap root is not damaged during harvesting. Training on these techniques is being provided through projects such as ICEMA, and have been an important part of recent efforts to expand the sustainable harvesting of devil's claw to conservancies in the Kavango and Otjozondjupa regions (Fleissner 2010).

There has been much progress with regard to the development of a sustainable indigenous natural products industry over the past few years, and the evidence suggests that there is much potential for further sustained growth in the industry. Namibia is well positioned to benefit from this growth. The increasing number of conservancies, the establishment of a Namibia Organic Association in 2009, as well as the specific investment by the MCA in the indigenous natural products industry all point towards this.

2.3.2.3 Wildlife

The wildlife industry has much potential for value addition and diversification of income opportunities for communal conservancies and commercial farmers in Namibia. Wildlife resource accounts published in 2009 using data from 2004 estimates that wildlife assets are worth N$10.5 billion and that wildlife contributed N$700 million or 2.5% of GNP in that year. Wildlife numbers were estimated at just over 2 million (Barnes *et al* 2009), and 88% of Namibia's wildlife is estimated to be found on freehold farms, 8% in communal areas and just 4% in state-protected areas (Mendelsohn 2006). While the freehold farms are characterized by common plains game species and predators such as cheetahs and leopards, key high value species such as elephant, buffalo, lion and rhino are concentrated mainly in communal conservancies and state-protected areas. Considerable efforts have been made in recent years to ensure that the country benefits both economically and ecologically from the potential of sustainable wildlife use.

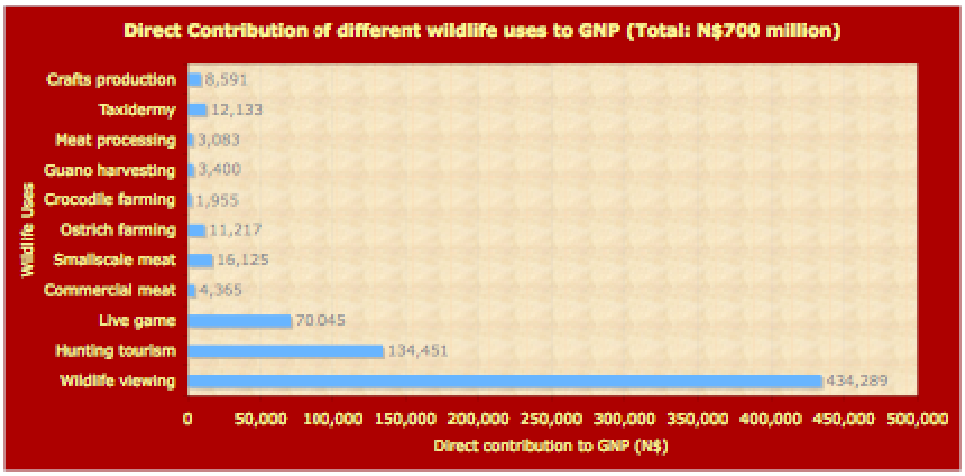


Fig 11: ***Wildlife viewing can clearly be seen as the most valuable contributor to the Namibian Economy*****. (Adapted from Barnes *et al* 2009).**

Wildlife in Namibia is typically marketed in four different ways each of which vary according to land use show high potential for sustainability:

- **Non-consumptive wildlife viewing tourism** (sustainable activity accounting for 62.5% of wildlife's direct contribution to GDP (Barnes *et al* 2009). Main type of wildlife utilisation in state-protected areas and on freehold land).
- **Trophy hunting** (practiced mainly on freehold land and accounting for 19% of wildlife's direct contribution to GDP. Take off is about 1% of the national wildlife herd and far less in some species (Van Schalkwyk and Hoffman 2010)).
- **Sale of live game** (Mainly from private land and state-protected areas. Has played an important part in Namibia's wildlife re-introduction strategy and has generated siginificant income for MET, which is re-invested into conservation activities through the Game Products Trust Fund .
- **Sale of Game Meat** (Commercial sale of game meat is well-established on freehold farms, and occurs on a more small-scale level in communal conservancies).

Case Study 8: Towards the sustainable use of wildife in communal conservancies in Namibia

Namibia's communal conservancy approach has recognised monitoring as the key to the sustainable use of wildlife. A pilot project started in 2000 to develop community-based monitoring skills in the Kunene region has evolved into the largest road-based game count in the world (Denker 2009). The approach has spread from the Kunene region to the Caprivi and conservancies in the north-central region and the south, where a combination of foot patrols, vehicle-based counts and aerial monitoring are combined. The counts are repeated at the same time every year and with the same methodology.

Staff and volunteers from the conservancies, the MET, NGOs and the private sector come together to carry out the count. It provides useful population estimates and trends over time both for individual conservancies and the entire areas covered. This information is also compared with the day-to-day monitoring carried out by conservancies throught the event book system, and it is used by the MET to develop sustainable wildlife utilisation quotas for each conservancy. The information from the counts is

also turned into regional posters, used by all stakeholders for information sharing, planning and management (Denker 2009).

2.3.2.4 Fisheries

At the time of Namibia's independence in 1990, many important fish stocks and other marine resources in Namibian waters had been severely depleted following decades of poorly regulated andunsustainable exploitation. In order to remedy this situation, the MFMR mandated the development and implementation of management policies, laws and regulations geared towards optimal and sustainable harvesting of marine resources within the context of the conservation of marine ecosystems.

The MFMR employs a system of "input" and "output" control measures to ensure the sustainability of Namibia's commercial fishing industry. Input control measures include limiting the number of vessels licensed to fish in Namibian waters, setting regulations regarding the types of fishing gear vessels may use, and by restricting the times of year that fishing can take place (MET 2006). Output control measures relate to the setting of limits (total allowable catch or TAC) and regulations on quota setting as well as regulations on the types of species and the size and other characteristics of fish (MET 2006).

More recently, the MFMR has made it a priority to embrace an "Ecosystem Approach to Fisheries (EAF) Management" to improve the management of its fish stocks. The purpose of this approach is essentially to sustain the health of the northern Benguela ecosystem in conjunction with the responsible use of its marine resources for current and future generations. The approach includes provision for a proportion of Namibia's marine areas to be declared MPAs (MFMR 2009). In addition, the MFMR has invested heavily since the mid 1990s on research and the development of a more effective management capacity. The NDP framework has identified 13 public investment priorities for the sector relating to monitoring, control, surveillance, research and training among others. The Sea Fisheries Advisory Council advises the MFMR on issues relating to management and conservation and a thorough surveillance system is facilitated by patrol vessels, aircraft and a satellite vessel-monitoring system.

The Benguela Current Large Marine Ecosystem (BCLME) programme, which was initiated in 2002, has provided valuable support to the MFMR in these areas and has improved greatly understanding and awareness of interactions between the various physical, chemical and biological components of the ecosystem. The BCLME Strategic Action Programme, a GEF-funded project approved in 2008, which aims to build on the BCLME programme and primarily addressing fish stocks and fisheries rejuvenation and sustainability, should continue to provide valuable support to the MFMR in this area.

As part of MFMR's EAF strategy, siginificant progress has been made in recent years with regard to the development of the aquaculture industry. This is also listed as a key priority under Vision 2030 and NDP3. It is envisaged that it will enhance food security, reduce poverty, generate employment and improve rural livelihoods. The aquaculture industry is currently worth N$20 million to the Namibian economy and employs 422 people directly (MFMR 2010). Aquaculture is also being pursued as part of an integrated approach to agriculture in the Kavango region.

Case Study 9: The Development of Aquaculture in Namibia:

- Pilot culturing of high value rock lobster species and mussels began in Lüderitz in 2007
- Three freshwater species: tilapia, catfish and carp are cultured in Namibia, and research into cultivating a second species of tilapia is underway
- Three inland research and culturing centres are operational:

I. Onanivi Inland Aquaculture Centre: focusing on training, fingerling production and breeding. It is envisaged that 1 million tilapia and 500,000 catfish fingerlings will be produced per annum for distribution to fish farmers in the North-Central regions

II. Epalela Fish Farm: Seeking to ensure that market-size tilapia are available to communities all year round. It is estimated that 40 tonne yields of tilapia and 7 tonne yields of catfish are achievable per annum

III Kamutjonga Inland Fisheries Institute (KIFI): Primary objectives are research and training, and fish and fingerling production. 1 million tilapia fingerlings are produced per annum and the KIFI also serves as a data centre (MFMR 2010)

NBSAP Strategic Objective II: Sustainable Use of Natural Resources

Outcome 2.1
Capacity to harvest biological resources sustainably is enhanced

Progress

- Community forests cover 1.6 million hectares (Arnold and Ries 2009). Training is provided to communities on how to conduct forest inventories upon which harvesting allocations are made
- Namibia has begun to implement an Integrated Water Resources Management (IWRM) approach. 3 basin management committees have been set up and activities towards the establishment of 3 more are ongoing
- The sustainable management of Namibia's fish and marine stocks is being guided by conservative total allowable catches (TACs) and improved investments in research and monitoring
- A revised devil's claw policy has layed the basis for the sustainable harvesting of that resource (MET 2010), and guidelines for sustainable harvesting have been developed and distributed to communities
- A guide for the sustainable harvesting of game for meat export has been produced
- A manual for sustainable rangeland management by natural resource users produced
- Annual game counts continue to be conducted by MET in collaboration with NGOs and conservancy staff to guide sustainable resource use for conservancies
- Local level monitoring of resources is being undertaken through the event book system, while a database called Coninfo has also been developed
- Four oils from Namibian plants and trees are now being exported to international markets, while several other plant products are under development

Achievement of Specific Targets

- User-friendly practical guide to determining sustainable harvesting and resource management and illustrating good and poor practice, based on national dialogue, distributed to resource managers and decision makers ✓
- 3 successful short training courses held for users, community service organisations and regulatory agencies on request ✓
- A report listing already marketed natural resource products and elaborating on further potential serves as guideline for resource users to diversify their products ✓

Challenges

- Mariculture sector badly affected by and struggling to recover from severe red tide events around Walvis Bay in 2008
- Low international price for devil's claw in 2008 negatively affecting rewards for local harvesters
- Prevalence of unsustainable harvesting practices for certain species such as devil's claw
- Technical capacity constraints
- High standards of hygiene and quality required for international markets
- Capacity of communities to be able to deliver reliable and timely supplies of raw materials

Outcome 2.2
Monitoring and incentive systems for sustainable natural resource use developed

Progress

- Local Level Monitoring tools for rangeland management are being built on by the CALLC sub-project of the CPP Programme and the MCA
- Event book system has become a fundamental part of conservancies improving their resource monitoring and management, which has contributed to the spectacular increases in wildlife numbers in many parts of Namibia
- Annual game counts take place between conservancies, MET staff and supporting agencies in the Kunene, North Central and Caprivi and Southern regions, making use of road-based counts, aerial monitoring and foot patrols
- Communal conservancies have laid the basis for a system whereby rural communities have been able to generate an income of N$42 million in 2008 (NACSO 2008)
- Harvesting of community forest resources is based on resource surveys of the forest areas and the development of management plans for these forests
- Incentives for the sustainable use of natural resource management include mainly employment creation, cash income, in-kind benefits and capacity building
- 29 joint venture lodges in communal conservancies provided almost 800 full-time and around 250 part-time jobs by 2008 (Sproule and Denker 2009), mostly in high quaility low impact tourism initiatives

Achievement of Specific Targets

- Support materials for specific groups of natural resource users on why and how to monitor aspects of the environment ✓
- Awareness materials on sustainable use and incentive systems made available to policy makers ✓
- Policy framework for natural resource and incentive systems developed ✓
- National drought policy rigorously implemented ➲

Challenges

- Rolling out the LLM approach to other areas of Namibia and its mainstreaming within extension services
- Aligning data from local level monitoring with that from national level monitoring activities
- Enforcement to ensure that quotas are complied with

Outcome 2.3
Agricultural biodiversity conserved and sustainably used

Progress

- The MAWF and NPGRC conducted germplasm evaluation and breeding for adaptation, early maturity, and drought-resistance. Recommended crops include groundnut (*Arachis hypogaea* L.); cowpeas [*Vigna unguiculata*]; bambara nuts; sorghum [*Sorghum bicolor* (L.)]; pearl millet [*Pennisetum glaucum* (L.)]; and maize [*Zea mays* (L.)] (UNAM 2008)
- Okashana 1 (early maturing and drought resistant pearl millet seed variety) has been developed and is being used by communal farmers in the north-central regions in conjunction with traditional varieties as a drought adaptation mechanism
- The NPGRC has multiplied about 670 crop accessions (36% of all crop accessions). The remaining 1200 accessions to be multiplied are mainly of pearl millet (UNAM 2008)
- A project of the MAWF began in 2009 to construct a laboratory for GMO detection (Horn *pers comm*.)
- Climate Change Adaptation Project through the Improvement of Traditional Crops and Livestock Farming is developing and piloting a range of effective coping mechanisms to assist farmers in the North-Central Regions including:

  The promotion of the indigenous and drought-adapted species such as boer goats and Sanga cattle
  Conservation agriculture programmes particularly for Mahangu and cowpeas
  Water harvesting and the provision of fish feed and improved seed to communities

Achievement of Specific Targets

- Case studies by landholders of benefits of biodiversity restoration are presented at popular and scientific, agricultural fora ✓
- Full national inventories of livestock and crop genetic resources by 2001 and 2005 ➲
- Agricultural genetic diversity awareness programme at local, national and international levels ➲
- Awareness materials for farmers and the public (on genetically modified organisms) distributed ✗

Challenges

- There has been no national inventory of livestock and crop genetic resources produced although a national livestock census is underway with support from the MCA
- Little awareness has been generated about the use and risks of genetically modified organisms in agriculture and their effects on food security
- Germplasm evaluation is constrained by lack of financial and human resources

Outcome 2.4
Indigenous Knowledge systems for sustainable management and use of biodiversity used

Progress

- PGH approach to sustainable rangeland management, building on the ideas of nomadic grazing, being pioneered in the Kunene region (see case study 11)
- The CBNRM movement is proving a useful platform for mainstreaming indigenous knowledge into value chains for indigenous plant products (see case study 6)
- Interim Bioprospecting Committee (IBPC) set up in 2007, which regulates access to genetic resources and associated traditional knowledge

Achievement of Specific Targets

- Indigenous resource management principles integrated into mainstream management practices at all levels ➲
- National forum on traditional knowledge established ✗
- Code of conduct and registration system for traditional healers in place ✗
- Traditional medicine and medical practitioners integrated within the national health system ✗

Challenges

- Overall indigenous knowledge on biodiversity is weakly mainstreamed into conventional conservation approaches
- Awareness needed to inform communities of the value of their traditional knowledge

Outcome 2.5
Bioprospecting and biotrade promoted and controlled to generate sustainable benefits

Progress

- The IBPC is Namibia's main mechanism to regulate bio-prospecting activities in Namibia since 2007
- Political awareness surrounding biotrade and bioprospecting has greatly increased. Namibia is leading the African Working Group on ABS in the IRABS negotiations. His Excellency President Hifikepunye Pohamba presided over a conference on ABS in Windhoek in 2010
- A variety of awareness material on ABS has been produced including "A future shared: A practical illustration of ABS in Namibia" (focusing on the marula case-study) and a booklet "Sharing the Benefits of Nature", which both seek to explain the relevance of ABS to the Namibian public

Achievement of Specific Targets

- All Namibian stakeholders involved in the development of new biotrade agreements equipped with relevant negotiations and monitoring skills ➲
- Three new value addition enterprises or facilities established ✓
- Awareness materials are compiled and distributed to target audiences, with training and information process on the new policy and legislation ✓

- Namibian legislation on acess to genetic resources harmonized with existing SADC frameworks ➲
- Contact established with key research and development institutions ✓

Challenges

- Ensuring optimal value addition to products before they are exported from Namibia
- Close collaboration between all relevant institutions to ensure sustainable use of resources across sectors
- Informing and training communities on the value of their traditional knowledge
- Capacity of border control points to prevent illegal export of genetic resources

Outcome 2.6
Safe use of biotechnology ensured

Progress

- Biosafety Act promulgated in 2006, and regulations for the act have been drafted
- Capacity building project on Cartagena Protocol on Biosafety relating to issues such as liability and redress and risk assessment, came to an end in 2009 and is being replaced by another to start in late 2010
- Guidelines on issues such as transportation, contained use in the laboratory, field trials and the commercial use of GMOs have been produced

Achievement of Specific Targets

- Government competent authority functional by the end of 2002 ✓
- Biosafety Act promulgated and National Biosafety Advisory Council (NBAC) established ✓
- Proposed procedures to support the policy agreed upon by relevant parties ✓
- Set of technical guidelines for handling GMOs published ✓
- Appropriate structures (National Biosafety Inspectorate and regulatory framework) in place and staffed with trained personnel ➲
- Database/information network accessible ✓
- Programme of training exposure visits commenced ➲
- Namibian biosafety webpage operational ✓
- Biosafety aspects included in UNAM science curriculum and SADC region capacity programmes ➲
- 15 Namibians trained in modern biotechnology procedures ✓

Challenges

- Biosafety council not functional until the regulations of the biosafety act are approved
- Transboundary movement of untraced and unknown seeds and genetic resources
- Inadequate capacity in terms of administration procedures and risk assessment

2.3.3 NBSAP STRATEGIC OBJECTIVE III: Monitoring, Predicting and Coping with Environmental Change and Threats

To ensure the sustainable use and management of biodiversity, Namibia has recognized the importance of knowing if biodiversity levels and ecosystem function are improving or degrading (IECN 2006). Environmental threats have been recognized in a number of different publications, and efforts to monitor these threats are ongoing through a number of different sectors and projects. As yet no centralized system for storing and making this data accessible has been set up. Major progress has however been made in involving local resource users in the monitoring of their resources and indicators of environmental change in recent years.

2.3.3.1 Identification of Environmental Threats

Namibia produced its first Integrated State of the Environment Report in 2006, based largely on a Environmental Monitoring Indicators Network (EMIN), which brought together a range of different

stakeholders active in environmental monitoring. This report identified a number of identicators that could be used to monitor the different environmental threats that Namibia is facing. These indicators were tailored to nine different themes (MET 2006):

I. DESERTIFICATION
- Land tenure and land use
- Livestock pressure in north-central Namibia
- Population pressure
- Change in forest area

II. BIODIVERSITY
- Coastal Development
- State protected areas
- Change in status of selected endangered habitats
- Number of threatened species per major taxonomic group
- Alien, invasive, and alien invasive species in Namibia

III. WATER AVAILABILITY AND QUALITY
- Mean annual rainfall
- Annual river run-off
- Water use and economic efficiency
- Quality of groundwater

IV. STATUS OF SELECTED NATIONAL RESOURCES
- Trends in the CBNRM Progamme
- Elephants in north-western Namibia
- Harvesting of marine resources
- Monitoring and control of harvesting of marine resources

V. POLLUTION AND TOXINS
- Annual fuel consumption- unleaded and leaded petrol, diesel and coal
- Marine Pollution
- Air Pollution in Windhoek

VI. SOLID WASTE MANAGEMENT
- Type and amount of general, hazardous and inert waste produced
- Type, number and location of municipal solid waste disposal sites

VII. GREENHOUSE EFFECT AND OZONE DEPLETION
- Annual energy consumption
- Mean annual rainfall
- Index of Upwelling
- Mean Annual Temperature in Windhoek
- Greenhouse gas emissions

VIII. SOCIAL ISSUES AND THE NATURAL ENVIRONMENT
- Human Development Index
- HIV prevalence in pregnant women

- Mortality rate for children under 5
- Access to improved sanitation

IX. ECONOMIC ISSUES AND THE NATURAL ENVIRONMENT

- Sustainable economic growth
- Percentage of total budget spent on the environment and related sectors
- Foreign Direct Investment
- Income from non-timber forest products

2.3.3.2 Monitoring of Threats to Biodiversity

While the envisaged production of annual state of the environment reports has not materialised (due mainly to a lack of funding and sustainability of the EMIN), there have been a number of developments with regard to the monitoring of the afore-mentioned environmental threats at both national and local level. Of particular relevance to biodiversity conservation have been the development of a Land Degradation Monitoring System (LDMS), a number of studies analysing the likely impacts of climate change on farming and wildlife, and the development of a set of biodiversity indicators. Meanwhile local capacity to detect environmental change and threats has been strengthened through the event book system (see section 2.3.2.3) and thorugh the creation of Forums for Integrated Management (FIRMs) and local level monitoring techniques both in and outside of conservancies.

2.3.3.2.1 National Level Monitoring Efforts

Environmental Observatories Network of Namibia (EONN) and BIOTA

The EONN was a technical working group set up during Namibia's National Biodiversity Programme (NBP), which ran from 1994-2005. The main aim of the EONN was to bring together institutions involved in monitoring, storing and using such data from sites across Namibia. The EONN is unfortunately an example of a programme that collapsed with the culmination of the NBP and associated funding. An International Long Term Ecological Research conference held at Gobabeb in 2005 was the last main initiative of the EONN programme (Irish *pers. comm*.). The BIOTA project has since taken over some of the functions that were intended to be served by EONN.

The goal of the BIOTA project is to gain knowledge for decision makers for a feasible and sustainable management of biodiversity, by taking natural as well as socio-economic conditions into account (Falk *et al* undated). The most relevant area where BIOTA has taken over the role of EONN has been in the setting up of a network of environmental monitoring observatories in Namibia and South Africa. These observatories monitor factors such as rainfall and indicators of vegetation health in collaboration with NBRI. However with the termination of the BIOTA project activities in March 2010, it is unclear how these observatories will be maintained.

Fig 12: ***BIOTA's environmental observatory network (Source: www.biota-africa.org)***

The responsibility of this has been passed on to NBRI, however there are fears as to how this can be sustainable given that institution's limited human and financial resources (Strohbach *pers. comm*.).

Land Degradation Monitoring System (LDMS)

A report was produced in 2009 on the possible design of a LDMS for Namibia. The report also analysed information systems, which are currently operational in Namibia, specifically those relating to land degradation, water resources and land use planning, and made a number of recommendations as to how the LDMS should function. It proposed a system based on 13 physical, biological, economic, social, and policy aspects of land degradation. It further proposed that data from the monitoring of the indicators be stored in the existing NamInfo database. In this way a centralised system of information could allow governments and related agencies to plan effectively and make decisions in a timely manner based on a reliable source of information.

However the full integration of the LDMS at national level is an ongoing challenge for Namibia. Two other options for this are currently being investigated. Firstly it may be possible to integrate the LDMS with another newly developed system; the Environmental Information System & Service, an initiative of the Namibia NNF, which is compiling a variety of environmental data ranging from EIAs to biodiversity information (linked to the google system for mapping purposes), and is now accessible online: www.nnf.org.na/EIS. A second option is to implement the LDMS through a revitalised EMIN, a process that is already underway with a greater ministry involvement to ensure sustainability.

Climate Change

Given Namibia's extreme vulnerability to climate change, a number of studies have been produced in recent years both independently and as part of Namibia's Second National Communication (SNC) to the United Nations Framework Convention on Climate Change. Of most relevance to biodiversity conservation have been studies on "Farming Systems Change to Enable Adaptation to Climate Change" (UNAM 2008); "Sea-level rise in Namibia's Coastal Towns and Wetlands: Projected Impacts and Recommended Adaptation Strategies" (Consulting Services Africa 2009); and a more recent study facilitated by the SPAN project entitled "Climate Change Vulnerability and Adaptation Assessment for Namibia's Biodiversity and Protected Area System".

The first study assessed research needs on farming systems change in Namibia to enable adaptation to climate change. It used a modelling approach to assess the impact of climate change on various types of agricultural practices and identified a number of possible adaptation strategies for Namibian farmers to pursue such as conservation farming, water harvesting technologies and improved crop varieties among others. The paper calls for long-term research and development and investment in breeding, biotechnology and seed technology programmes, particularly in relation to indigenous livestock and plant breeds. The selection and multiplication of crops with high tolerance to abiotic stresses has the potential to harness genetic variability in crop varieties and contribute to agricultural productivity and food security in the face of climate change.

The second study analysed another aspect of climate change that is likely to have far-reaching effects on Namibia's biodiversity, namely that of sea level rise. A rise in mean sea level rise is projected to slowly inundate wetlands and lowlands, which will cause an increase in the salinity of estuaries and aquifers. This is a major threat for biodiversity in coastal areas and wetlands as these provide spawning and nursery grounds for many fish species. Increased salinity in these areas is likely to lead to the decimation of organisms that are not resistant to the highly saline environment. This in turn could affect shore birds

that rely on these organisms for foraging habitat during their migration and nesting sites in the coastal wetlands (Consulting Services Africa 2009).

The third study offers a more explicit insight into how climate change is likely to impact upon biodiversity in terms of species distribution, composition and migration. The following predictions were made:

- Greatest loss of plant species is expected to be felt in the central, northern and eastern areas
- The distribution range of 7% of plant species may move out of Namibia; 52% of species may experience range contraction; while 41% will expand their ranges
- Wildlife grazers are to decline on average by 13% by 2050 and by about 24% by 2080
- None of the ranges of plains game species are likely to move out of any of the national parks
- Springbok and gemsbok are likely to expand their ranges to the Bwabwata National Park
- Human wildlife conflict may increase due to pressure on habitats (SAIEA in press)

The study concludes that an improved management approach over natural resources and rangelands, which facilitates the mobility of plains game species, is key in this context. It is recommended to build on Namibia's CBNRM programme and to extend the coverage of community and private conservation areas further into areas threatened by biodiversity loss (SAIEA in press).

Biodiversity Indicators

A study was commissioned in 2010 through the SPAN Project to develop biodiversity-specific indicators for the protected area network in Namibia. This study is underway.

2.3.3.2.2 Local Level Monitoring Techniques

It was noted in setion 2.3.2.3 of this report, that conservancies have set in motion a process of establishing resource monitoring by communities in alliance with the MET as well as NGOs and projects. This is achieved mainly through the annual game counts and the evident book system, the direct results of which lead to sustainable resource use through the quota utilization system. Outside of conservancies, other approaches of community resource monitoring have been instigated in Namibia. NAPCOD introduced the idea of local level monitoring (LLM) usually implemented through the creation of local Forums for Integrated Resource Management (FIRMs). This approach is being built on primarily through the CPP and MCA (Seely in press).

LLM is a tool for improved decision making based on the monitoring of biophysical indicators that farmers themselves identify. LLM consists of four different indicators; livestock condition, fodder availability, rainfall, and rangeland condition/bush density. The monitoring is done by farmers using a field guide developed for the specific geographical area with tables and graphs that are easy to fill in. Discussion and application of the results of the monitoring is done by communities, preferably facilitated by relevant service providers such as agricultural extension technicians. Monitoring itself is not the goal of LLM, but rather a means of gathering information that is subsequently used by communities for decision making purposes. In this way technical and scientific skills are applied by communities.

Indicator	Definition
1. Livestock condition	The general assumption for this indicator is that the condition of livestock integrates the rangeland condition and is independent of breed, sex, age and body mass of the livestock.

2. Rangeland condition	The aim of this indicator is to assess and monitor rangeland condition and bush densities in a very simple way over time.
3. Rainfall	Local livelihoods are very much influenced by the amount of rainfall received. Knowledge of rainfall and its effects on the veld condition and productivity is thus useful for informed decision-making.
4. Fodder availability	The aim of this indicator is to assess rangeland productivity. The assumption for this indicator is that changes in grass, bush and tree cover can have damaging effects in the productivity of land.

Table 9: ***Indicators typically used in LLM techniques in Namibia*** **(Summarised from Kruger and Seely (undated)).**

2.3.3.3 Combating Desertification

Namibia has a relatively long and successful experience of combating desertification, and is one of the most active contributors to the UN Convention to Combat Desertification. Its first formal national programme to combat desertification (NAPCOD) began in 1994, which generated a wealth of experiecnce and innovative approaches to tackle the problem. It laid a sound basis for combating desertification and is now systematically being built on by other agents.

Namibia's second national action programme, the CPP, was launched in 2008 and is now being implemented in all of Namibia's regions containing communal land. The programme uses three sub-projects to enhance sustainable rangeland management, climate change adaptation, and livelihood diversification through natural products, agriculture, enterprise development, aquaculture among others. The PESILUP sub-project (Promoting Environmental Sustainability through Improved Land Use Planning) will add sustainable land use planning to this portfolio of interventions and is due to get underway later in 2010. The programme is truly cross-sectoral with an innovative coordinating framework in place (involving eight Ministries, the UN agencies, NGOs, academic institutions and donors) to give policy direction, and to monitor and take the steps needed to improve the impacts of the programme's projects.

The achievements of Namibia's CPP programme so far (from CPP Annual Report 2009)…

- Integrated sustainable land management activities are being practiced in 37 pilot sites covering over 47,000km^2 and some 152,000 people
- An Integrated Natural Resources Working Group has been set up to harmonise the policy framework affecting sustainable natural resource management, and a review of 18 sustainable land management related policies has been carried out
- The Enhancing Insitutional and Human Resource Capacity through Local Level Coordination of Integrated Rangeland Management and Support (CALL-C) sub-project of the CPP has established 14 local level institutions to lead the implementation of sustainable land management practices based on integrated workplans they have developed
- A climate change community adaptation toolkit has been produced and distributed to communities in the north-central regions. A manual for the sustainable management of communal rangelands has also been produced for dissemination to local farmers
- The CPP's innovative grants mechanism (IGM) has supported 17 community-based organizations with over N$4 million to implement livelihood-based activities, which are socially, economically and ecologically beneficial for local people and their environment
- 20 CBOs are being supported through the IGM to develop proposal writing skills for new livelihood-based enterprises and to improve their implementation capabilities

- The Young Professional Research Associate programme has been launched to support Masters level and PhD students in the field of environment and development. As of 2009, there were four students supported at MSc level as well as two PhD students

Case Study 10: Conservation agriculture

Conservation Tillage (CONTILL) Project in Northern Namibia

The CONTILL project is specifically concerned with increasing the yields of mahangu, also known as pearl millet, which is a staple crop well adapted to the arid and variable climate and sandy soils of Northern Namibia. Indeed mahangu is the most drought tolerant cereal crop and has great potential to offer as a buffer against climate change. Unfortunately over the past 20 years it has been recorded that mahangu yields in the northern areas have been declining and that the already poor soils have been degrading (MET 2010). Research and observations noted that the conventional disc harrowing technique and a lack of application of crop residues were leading to the compaction of the soil and the formation of a hard pan.

The CONTILL project advocates the use of a ripper furrower/constant traffic approach to break up the compacted soil and to ensure in-field water harvesting and soil improvement. In the first year the ripper furrower must be drawn by tractor to make the initial furrow lines, but an animal drawn furrower may be used in subsequent years to follow the same previous rip furrow lines (constant traffic system). The use of the same furrows increases water harvesting and allows for the concentrated build-up of soil improvement at the base of the furrow.

Performance assessments have been carried out on the CONTILL approach on local farms (including with the use of fertiliser, manure, no fertiliser or manure, or a fertiliser and manure mixture in the furrows) to compare the respective yields against the farmer's traditional (current) approach. After two seasons of on-farm trials, it has been concluded that using the mechanical ripper/furrowing approach to break the deep and hard soil compaction is a good practice. In-field water harvesting (IFWH) is also an effective part of conservation agriculture in that a seasonal rainfall of 300mm can be converted to up to 520mm for the plant in the furrow at 1m spacing. The application of 200kg/ha fertiliser is also beneficial and with increased yields is now economically viable. A doubling of yields was recorded against traditional methods even when no fertiliser or manure was applied to the furrow, while in some cases yields were quadrupled (MET 2010).

Case Study 11: Planned Grazing through Herding (PGH)

A new strategy for improved rangeland management in communal areas of Namibia has been developed through the NGO IRDNC. The PGH strategy signals a notable shift away from interventions based on de-stocking animal numbers according to defined carrying capacities (which is often socially unacceptable in communal areas) towards addressing the frequency of grazing and the subsequent impacts on perennial grasses. PGH involves combining herds from neighbouring farms and herding all livestock from a single or several water points to a different patch to graze each day. The first step in the PGH process is defining who the landowners are, and forming a grazing committee based on this. The committee then defines the grazing area to be used which must also be endorsed by the Traditional Authority. Then a grazing plan and a land use plan are established. The aim of the grazing plan is to get the animals to the right place at the right time for the right reasons, taking into account social, economic and environmental factors. The aim of the land plan is to ensure that infrastructure development is

financially sound, well planned and sited in the correct place. This is particularly necessary for the provision of alternative water sources which are expensive and require careful planning.

Evidence from the PGH approach in South Africa and Zimbabwe suggests that successful farmers were able to double their stocking rates while simultaneously improving the resource base. This is a vital area of concern for communal farmers who have in the past resisted attempts for them to destock, as livelihood numbers are often still an important indicator of wealth in these areas. In this respect the PGH approach is more culturally acceptable and thus applicable to communal farmers, which is confirmed by the request from 20 groups in communal areas to start the approach in Namibia (MET 2010).

2.3.3.4 Rehabilitation of Degraded Ecosystems

Mining and bush encroachment have been identified as two major threats to biodiversity conservation in Namibia. Namibia faces a difficult challenge in that its two major biodiversity hotspots also contain the country's two largest mining-related areas of operation, namely diamond mining in the Sperrgebiet and expanding uranium operations in the central Namib. For example just over 400 plant species or about 10% of Namibia's total plant species occur in the Central Namib area (Burke 2003), while about 1,050 plant species are known to exist in the Sperrgebiet (SPAN 2008a). This has prompted the MET to draft a national policy on mining in protected areas, so that effects of mining on biodiversity can be minimized.

Meanwhile mining companies have begun to play an important role in the rehabilitation and restoration of degraded ecosystems, and in addressing the needs of threatened and endemic species. Rio Tinto, the owner of the Rössing Uranium mine in the Central Namib area, has developed a biodiversity strategy for the mine. The Millennium Seed Bank Project (2001-2009), assisted the company with seed collecting and training mine staff in seed collection; identification of collected specimens; and with the compilation of a seed collection guide for use on the mine concession area. The main part of the project was completed by the NBRI and focused on the assessment of two red data species, *Lithops ruschorium* and *Adenia pechuelii* in the mine area and nationally (Kolberg 2009) (case study 5 for further information).

In the Sperrgebiet area, Namdeb, Namibia's main diamond mining company, has initiated work on the rehabilitation of mined areas, in partnership with the NBRI. Experiments were carried out on two sites at Bogenfels and Sendelingsdrift that were still to be mined. At Bogenfels rehabilitation involved the collection and storage of seeds, re-seeding and the re-establishment of one of the key plant species in the area, *Salsola nollothensis.* At Sendelingsdrift work focused on re-establishing the threatened succulent *Juttadinteria albata,* as mining will destroy a large part of the known world population of this species (Kolger 2009).

The problem of bush encroachment is having major ecological and economic impacts on Namibia, especially in the Acacia savannah biome. Bush encroachment is defined as "the invasion and/or thickening of aggressive undesired woody species resulting in an imbalance of the grass:bush ratio, a decrease in biodiversity, and a decrease in carrying capacity" (de Klerk 2004). *Acacia mellifera* is the most widely distributed encroacher species followed by *Dichrostachys cinerea.* Commercial livestock farming is the dominant land-use in the acacia savannah biome, and poor management practices have seen grazing areas reduced by some 26 million hectares by these encroacher species (de Klerk 2004).

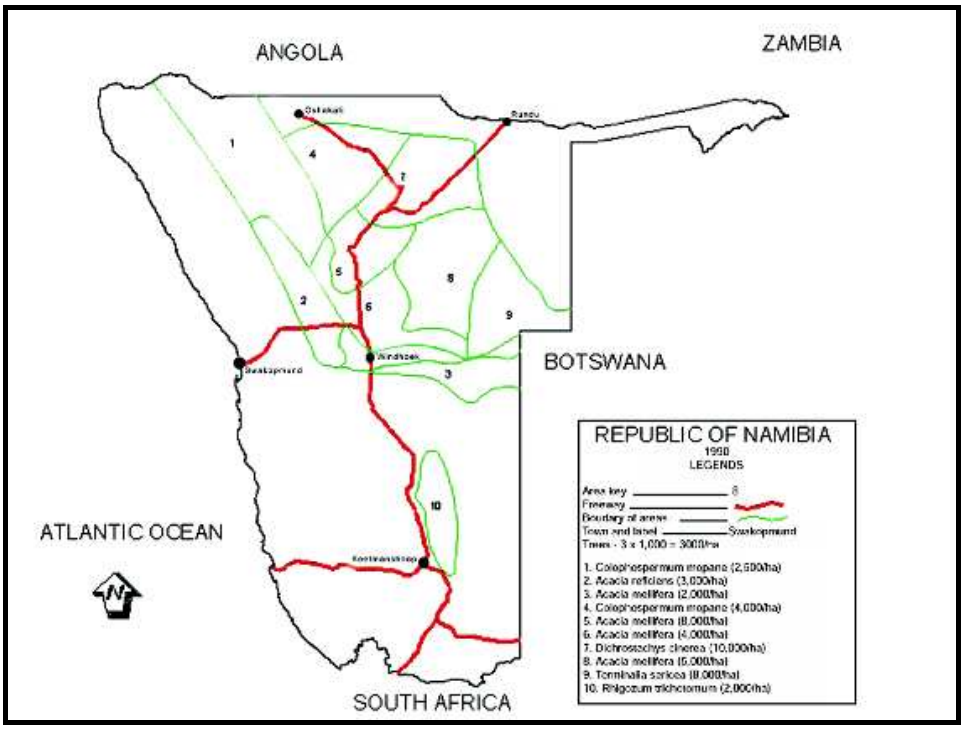


Fig 13: ***Main areas affected by bush encroachment in Namibia and the types of invader species*** **(Source: Bester 1996 in de Klerk 2004).**

The NGO DRFN began an innovative project in 2007, with support from the European Commission's Rural Poverty Reduction Programme, to provide a solution to this problem by converting the invading bush into energy. The project plans to install wood gasification plants in the affected areas, which will use the invader bush as fuel to produce electricity. Construction of Namibia's first wood gassifying plant has begun, which will feed 250kw/h into the electricity grid (Insight Magazine 2010). The Directorate of Forestry within the MAWF is also very actively involved in this area and is promoting the the conversion of bush to charcoal as part of its strategy to sustainably utilize unwanted bush to restore degraded land.

2.3.3.5 Alien Invasive Species

A report on invasive alien species in Namibia was produced in 2004 (see Bethune *et al* 2004). The report identifies and describes Namibia's 15 most important invasive alien plant species as well as 11 alien animal species, which have the potential to become extremely invasive in Namibia.

Major invasive plant species in Namibia	Major alien animal species
• ***Salvinia molesta***: aquatic weed mainly in Caprivi wetlands • ***Argemone ochroleuca***: spiny annual in disturbed areas and river courses • ***Datura inoxia***: annual herb, which invades	• ***Cherax quadricarinatus***: freshwater crayfish, recently introduced and could cause sesrious problems if allowed to escape into Namibian wetlands • ***Lymnaea columella***: snail with the ability to

disturbed areas and river courses in western Namibia

- ***Leucaena leucocephala***: "Wonder tree" found mainly on townlands
- ***Dodonea angustifolia***: small tree found in vicinity of Outjo and Otjiwarongo and in the Auas mountains
- ***Lantana camara***: feared could become highly invasive in Caprivi and Kavango
- ***Opuntia***: various species, which could be considered the most invasive terrestrial alien plant species in Namibia
- ***Pennisetum*** setaceum: rapidly increasing fountain grass found mainly on road verges and in gullies
- ***Melia azedarach***: syringa, found originally around Grootfontein but little current information on its spread
- ***Nicotania glauca***: wild tobacco found moreso in western Namibia in riverbeds, disturbed areas and on old cultivated lands
- ***Prosopis species***: mesquite with extensive distribution, high densities and negative impacts on biodiversity and ecosystem functioning
- ***Pistia stratiotes***: water lettuce affecting wetlands in Northern Namibia
- ***Myriophyllum aquaticum***: introduced as ornamental plant, invades still to slow-moving waters
- ***Azolla filiculoides:*** introduced as ornamental plant, known to invade dams, quiet rivers and vleis colonize a wide variety of habitats and transmits liver fluke to cattle
- ***Mytilus galloprovincialis***: Mediterranean mussel
- ***Cyprinus carpio***: common carp,attention needs to be given to prevent its spread to Northern perennial rivers particularly through aquaculture
- ***Micropterus salmoides***: freshwater fish species
- ***Oreochromis mossambicus***: freshwater fish species
- ***Trachemys scripta***: highly invasive species of terrapin worlwide, imported by South Africa and needs to be prevented from Namibia's rivers, especially in Caprivi and Kavango, which is home to two endemic terrapin species
- ***Felix catus***: domestic cat, destroy elements of biodiversity and breed with the African wild cat, compromising its genetic integrity
- ***Felix catus/lybica***: hybrid cat
- ***Mus musculus***: house mouse, rarely problematic
- ***Rattus rattus***: house rat, generally low populations but more common at the coast
- ***Rattus norvegicus***: brown rat

Table 10: *The most invasive plant and animal species in Namibia* (Source: Bethune *et al* 2004).

The MET,MFMR and MAWF are actively involved in research on and control of alien invasive species. The MAWF has a programme to biologically control the aquatic weed *Salvinia molesta,* the MFMR's Aquaculture Act (2002) places strict restrictions on the import or transplanting of aquatic organisms, while the MET gives due attention to alien invasives in its Draft Parks and Wildlife Management Bill. In addition members of the NBSAP's alien invasives working group have carried out studies on *Prosopis spp., Salvinia molesta, Mytilus galloprovincialis* and *Pennisetum setaceum*.

NBSAP Strategic Objective III: Monitoring, Predicting and Coping with Environmental Threats
Outcome 3.1 **National Capacity strengthened for reliable decision-making on the environment and development**
Progress

- A National Land Degradation Monitoring System (LDMS) has been developed (CPP Annual Report 2009)
- Each of Namibia's 12 Communal Land Boards received training on "Sustainable Development and Environmentally Sound Decision Making in 2007 and 2009 (MET in press)
- Provision for the establishment of a sustainable development advisory committee has been made as part of the Environmental Management Act to promote coordination and cooperation on environmental issues between government institutions, NGOs, CBOs and the private sector
- A total of 307 certificates were awarded to coastal officials trained in 2009 in Integrated Coastal Zone Management, Resource Economics, Governance in Integrated Management, Tools for Sustainable Coastal Management, Data Management and Data Analysis and Strategic Planning (NACOMA 2009)
- SEAs conducted for the coastal regions and local municipalities, regional councils and local authorities trained on how to use SEAs as a decision support tool (DST)
- Environmental Monitoring Indicators Network (EMIN) is being revived to bring together stakeholders involved in environmental monitoring. The MET is playing the lead role in institutionalising the EMIN
- Biodiversity specific indicators for protected areas are currently being developed through the SPAN Project

Achievement of Specific Targets

- Study on biodiversity indicators for State of the Environment Reports (SOERs) completed and first vital signs SOER completed by 2004 ✓
- National Advisory council meets regularly and includes environmental change issues integrally in its scope ➲

Challenges

- The LDMS has not yet been fully integrated at national level, and discussions are currently underway to identify the appropriate government system to implement it
- EMIN existed in the past and played a major role in the state of the environment report (SOER) of 2004, however it and the plan for yearly SOERs became dormant after project terminations and lack of available funds
- For the LDMS and EMIN to be sustainable , training and capacity building will be needed for MET staff to manage and maintain the system and network

Outcome 3.2
National and local capacity strengthened to monitor, detect and predict environmental change

Progress

- Local level monitoring (LLM) tools are being built on through the CALLC sub-project of the CPP and the MCA
- Local early warning mechanisms are in place in the form of the Early Warning and Information System (EWIS) and Emergency Management Unit (EMU). EWIS focuses largely on rainfall and cereal production
- Training provided to community members for resource monitoring in communal conservancies and community forests
- First National Livestock Census in Namibia is being developed by the MCA

Achievement of Specific Targets

- Environmental Observatories Network of Namibia (EONN) operational ✗
- Southern African Environmental Observatories Network meeting hosted by Namibia ✓
- 5 observatories in the country fully equipped and operational (including Gobabeb Training and Research Centre and Etosha Ecological Reseearch Institute) ✓ (BIOTA)
- Data collected from the 5 observatories shared and processed in the form of a publication ➲ (being compiled by BIOTA)
- Meta-database framework established by EMIN and EONN ✓ (BIOTA)
- Cluster of local or regional workshops (relating to environmental monitoring) conducted ➲

Challenges

- LLM techniques need to be mainstreamed within agricultural extension officers, ie. the training of trainers
- Need to cross-check data collected through LLM with remotely sensed data and fixed point photography techniques

- Access to and availability to environment-related data is a challenge at national level. There is no central system from where data can be stored and made accessible to relevant institutions
- In terms of flooding, many areas of Namibia are flooded from areas beyond its national borders which requires close transboundary cooperation
- Sustainability of networks set up such as those by EONN and BIOTA after withdrawal of funding is an urgent problem

Outcome 3.3
Reliable indicators and monitoring systems of biodiversity and ecosystem function

Progress

- A network of 28 environmental observatories are operational in Namibia through the BIOTA project and partners with the involvement of local stakeholders
- A number of social and biophysical indicators have been developed for the LDMS
- Biodiversity specific indicators are being developed through the SPAN project
- Biodiversity inventory conducted for the Windhoek Municipal area
- Regular wildlife surveys are undertaken in protected areas, and annual game counts are undertaken in conservancy areas

Achievement of Specific Targets

- Case Study from Oshikoto region on biodiversity and environmental sustainability finalized ✗
- Pragmatic terrestrial national-scale biodiversity monitoring programme in support of SOER designed ➲
- 5 biodiversity and ecosystem function indicators for terrestrial, freshwater and marine environments regularly monitored ➲

Challenges

- The continuation of the BIOTA project monitoring system after project funds finish (2010)
- Integrating the wide variety of environmental monitoring information into one central accessible database
- Human and financial resources for monitoring

Outcome 3.4
National capacity enhanced in biosystematics to support biodiversity management

Progress

- Biosystematics coordinator was appointed but is no longer functional
- Global biodiversity information facility project was undertaken to consolidate information on invertebrates in Namibia
- Comprehensive biodiversity database set up and still available at www.biodiversity.org.na

Achievement of Specific Targets

- Biosystematics coordinator appointed ➲
- Funding proposal secured for improving Namibian biosystematics services ➲
- National programme of inventory work in place ➲

Challenges

- Most of the achievements under this outcome were achieved under the NBP and have not been carried over into the NBSAP due to lack of funding and capacity
- Namibia's biosystematics needs were identified at a workshop in 2002 (Irish 2003) but these have never been systematically addressed
- Database is no longer being updated, no longer funding for this initiative

Outcome 3.5
Main environmental threats identified and monitored

Progress

- Environmental threats have been well identified in Namibia through the Integrated State of the Environment Report (MET 2006) and sectorally
- Key biodiversity and environmental indicators have been identified

Achievement of Specific Targets

- Priority list of environmental threats agreed on ✓
- With other partners of EMIN and EONN, the National Biodiversity Programme and the State of the Environment Reporting Project develop key biodiversity and environmental indicators and a monitoring programme ➲
- First full state of the environment report on biodiversity finalized ✗
- Permanent Secretary roundtable briefings on the state of environment and environmental threats are held 3 times a year ➲

Challenges

- Monitoring takes place largely on a sectoral basis and ad-hoc basis with little integration between sectors
- Capacity and resources required for effective long-term monitoring

Outcome 3.6
Awareness raised and capacity strengthened to adapt to climate change

Progress

- Draft National Climate Change Policy has been produced
- Namibia's Second National Communication (SNC) to the UNFCCC has been completed and a number of studies have been carried out on climate change related areas such as sea level rise, an assessment of Namibia's vulnerability and adaptation, changes in farming systems for adaptation and a review of Namibia's energy sector
- Awareness material in the form of booklets and posters has been produced and widely distributed, while a national climate change youth symposium was undertaken in 2009
- A climate change community information tool kit has been produced and about 200 farmers and community members have so far been trained on its application (CPP 2009) as part of the Climate Change Adaptation (CCA) Sub-Project of the CPP operational in the northern regions
- The CEGEM project is building on Namibia's national capacity self assessment and enhancing national level capacity so that the Rio Conventions can be effectively implemented
- Namibia's African Adaptation Project launched in 2010

Achievement of Specific Targets

- Namibia's Initial National Communication to the UNFCCC submitted ✓
- INC identifies main areas of climate change impact on biodiversity ✓
- Climate change impacts on Namibian terrestrial ecosystem boundaries and species distributions preliminarily analyzed ✓
- An information brochure on the vulnerability of Namibia to climate change and potential mitigation strategies available to key decision makers by 2003 ✓
- National Capacity Self Assessment (NCSA) underway by 2002 and gaps identified by 2004 ✓
- Indicators of climate change monitored at 5 EONN sites ✓ (BIOTA)
- Map of biodiversity priority areas produced with at least 3 relevant climate change monitoring and research programmes implemented at these sites ➲
- Environmental update briefing sheets focusing on climate change and biodiversity issues distributed to parliament at least once yearly by 2003 ✗ (started but not continued)
- Pamphlet on strategies to mitigate the effects of climate change distributed to natural resource users ✓

Challenges

- Little knowledge as to how climate change will affect the coastal fog belt and the Benguela current ecosystem, which is known to be vital for the survival of most of the endemics and many of the other animal and plant

species in the Namib desert biome
- Possibility of local extinctions in the Succulent Karoo hotspot and widespread changes in distribution and extent in species
- Further awareness raising is necessary particularly in the rural regions

Outcome 3.7
Desertification, degradation and land conversion managed and mitigated

Progress

- The CPP Project (2008-2018) adopted as Namibia's second national action programme to implement the UN Convention to Combat Desertification
- An Integrated Natural Resources Working Group has been set up to harmonise the policy framework affecting sustainable natural resource management,
- Young Professional Research Associates Programme set up to support research into issues affecting sustainable land management
- Local level institutions such as FIRMs and CBOs are being expanded to lead the implementation of sustainable land management practices based on integrated workplans they have developed
- Increased support to livelihood diversification through mechanisms such as the Innovative Grants Mechanism
- Toolkits on rangeland management and climate change adaptation developed and tested
- Integrated ustainable land management activities being implemented at 37 pilot sites (CPP 2009)

Achievement of Specific Targets

- National overview map and indicators of desertification developed ✓
- Local level environmental monitoring kit for farmers developed and tested ✓
- Community-based organizations empowered to manage their resources to mitigate the effects of desertification at a minimum of four pilot sites ✓
- Regular information exchange between commercial service providers, develoment agencies and resource users is established through networks and local and regional government planning fora ✓
- Napcod policy document is reviewed and biodiversity-related loopholes are identified and integrated into policy action plan ➲

Challenges

- Rural communities lack the skills needed to access available resources to address land degradation
- There is also often a lack of capacity to implement community-driven initiatives, which are typically given little technical support
- The capacity of institutions to undertake cross-sectoral planning in support of integrated sustainable land management remains a challenge at all levels

Outcome 3.8
Threat to biological diversity from alien invasive species reduced

Progress

- Country study on alien invasive plants and animals completed
- Research projects conducted on *Prosopis* spp, *Salvinia molesta* , *Mytilus galloprovincialis* and *Pennisetum setaceum*
- Namibian Sanitary and Phytosanitary and Food Safety Committee set up in 2009 in line with the SADC Sanitary and Phytosanitary Annex to the SADC Protocol on trade
- Municipal by laws make it illegal to propogate and plant Prosopis in Windhoek

Achievement of Specific Targets

- Detailed country study on invasive species in Namibia, including prioritised lists of problem plants, insects, mammals and other taxa ✓
- A comprehensive database on plant and animal invasive species is established with at least 1500 new atlas records per year from across the country until 2008 ➲

- Research recommendations on the control of the top 50% priority plant, insect and mammal species taken up by implementing agencies by 2008 ➲
- Namibian policies and regulations on alien invasives are strengthened and harmonized with other SADC countries ➲
- Namibian phyto-sanitary, extension and customs units are fully equipped to control invasives ➲
- Yearly "Update" briefing sheets and display materials including school competitions are established ✗
- Effective annual courses are designed and offered to priority target audiences ✗
- Pilot experimental control projects for top priority invasive alien species established ✓

Challenges

- Directorate of Forestry continues to promote alien invasives through tree planting initiatives (such as of eucalyptus species in the north central regions) and sales from nurseries
- Political will and understanding to tackle the problem of invasives
- Trade partners and cross border trade and control officials were not represented in the Alien Invasives Working Group, neither were communities

Outcome 3.9
National and local capacity to manage and reduce pollution strengthened

Progress

- Environmental Management Plans being developed for each of Namibia's coastal towns
- Environmental Management Act makes provision for the polluter pays principle in Namibia, promotion of reduce, reuse and recycling (3Rs) and the establishment of waste disposal sites
- Increased awareness raising of the 3Rs of waste management

Achievement of Specific Targets

- National overview map indicating areas threatened by pollution of different kinds is available to decision-makers and planners ✗
- Integrated Pollution and Waste Management Bill and Environmental Management Bill promulgated and staff positions filled ✗

Challenges

- Namibia's Pollution and Waste Management Bill has been in draft form since 1999
- Inadequate enforcement capacities relating to the control of pollution

Outcome 3.10
Rehabilitation and restoration methods developed and applied to degraded ecosystems

Progress

- A variety of bush thinning programmes underway in the bush-encroached central regions
- Pre and post-mining rehabilitation programmes underway in the Sperrgebiet with Namdeb and also in the Central Namib through Rössing Uranium's biodiversity plan

Achievement of Specific Targets

- Key landscape processes for main habitat units and land use categories of Namibia are available as a map and accompanying brochure ➲
- Comprehensive handbook on suitable restoration and rehabilitation methods made accessible to a broad readership, if necessary in local languages ✓
- Concept of incentives for ecosystem restoration is included in an integrated policy framework for sustainable environmental management ➲

Challenges

- Marine degradation resulting from increased offshore mining activity

- Conversion of "bush to biomass" requires large volumes of water for evaporative cooling

2.3.4 NBSAP STRATEGIC OBJECTIVE IV: Sustainable Land Management

2.3.4.1 Land Reform Process and Land Use Planning

Lack of security with regard to land tenure in communal areas (44% of Namibia's total area) has been recognized in the past as a contributing factor towards land degradation and an impediment to private investment in communal areas. Communal farms are not "owned" and thus cannot be used by farmers as collateral against loans for on-farm investment. In addition there is much uncertainty with regard to legitimate access and rights to communal land and the ways in which communal land is administered (LAC 2003). This stands in direct contrast to commercial land, which is well organised and regulated.

The promulgation of the Communal Land Reform Act in 2002 represents an important part of the government strategy to empower a wider array of citizens with access, use and secure tenure of land and rights for a meaningful habitat, livelihood, recreation and sustainable social and economic development activities. The Communal Land Boards, mandated by the Act, are now fully functional in all communal regions. These bodies have formalized the allocation of customary land rights by creating and maintaining a register, where all land allocations and transfers are recorded. Perhaps more importantly for biodiversity, the land boards also decide on leasehold applications in communal areas, which have the potential to negatively impact upon the environment. For this reason, each of the 12 land boards received training on "Sustainable development and environmentally sound decision-making" in 2007and 2009 through a joint initiative of the MET and the Ministry of Lands and Resettlement.

Commercially-oriented activities and new land use options are increasingly being implemented in communal areas. Examples of these include applications for large scale biofuels plantations in the Kavango and Caprivi regions, the Green Scheme (a large-scale irrigation-based agriculture project) mainly along Namibia's northern rivers, conservancies and community forests, tourism developments and aquaculture initiatives among others. Namibia has recognized Integrated Regional Land Use Plans (IRLUPs) as a mechanism to harmonise these different land uses, along with more "traditional" land uses such as mining and farming. Importantly and in line with the Environmental Management Ast (2007), SEAs are being integrated into the IRLUPs with due consideration being given to environmental issues such as water resources management, bush encroachment and climate change (Haub 2009). A new style of IRLUP based on this approach is currently being pioneered in the Karas region and it is hoped that this approach will be rolled out to Namibia's other regions thereafter.

2.3.4.2 Alternative Land Uses

Tourism Concessions

In addition to some of the more alternative sustainable land management activities being promoted in Namibia through the CPP and MAWF among others, the MET has been implementing a policy of tourism and wildlife concessions on state land since 2007 as a means of involving previously disadvantaged Namibians in high value/low impact nature-based tourism. A concession allows a community, conservancy or privately-owned tourism business to operate on state land (MET 2007a), usually for the purpose of tourism services such as lodges, camps, guided tours or for trophy hunting. Enhancing the conservation of biodiversity and maintenance of ecological integrity in proclaimed protected areas is also one of the stated objectives of the policy (MET 2007a).

A number of key principles guide the awarding of concessions, all of which promote the maximum involvement and benefit of local communities in the concessions. An environmental and development checklist for the construction and management of each concession serves to ensure that they have a minimal impact on the environment and local biodiversity. Environmental scoping studies, requirements for the use (where possible) of local materials in any construction and waste management plans are examples of some of the criteria that need to be met prior to the awarding of any concession. A dedicated concessions unit in the MET attends to these matters.

The Policy on Tourism and Wildlife Concessions has paved the way for a number of joint venture (JV) agreements between communities and private sector tourism operators for the benefit of both and Namibia's sensitive environment and biodiversity. Some examples of recent progress include:

- 29 JV lodges and campsites working in collaboration with host conservancies
- JVs providing 789 full-time jobs and 250 seasonal positions
- Private-sector tourism JV investment has exceeded N$145 million since 1998
- Number of JV lodge agreements has increased by 11% since 2005 (Sproule and Denker 2009)

Community Forests

The promulgation of the Forest Act (2001) paved the way for the establishment of community forests, which has extended Namibia's CBNRM programme to cover forest resources and grasses. Community Forests may be declared on communal land with management rights devolved to an organisation representing people who traditionally use the forest. In a system similar to communal conservancies, sustainable resource utilisation is guided by community-based reource monitoring upon which a forest management plan with an annual allowable harvest is developed. In order to facilitate this, local members of forest management committees were trained in participatory natural resource assessment and sustainable forest and woodland management (Arnold and Ries 2008).

The programme is supported and funded through two German development agencies – the German Development Bank (KfW) and the German Development Service (DED). By the end of 2007, forty community forests covering an area of 1.6 million hectares had been set up mostly in the north-eastern regions with approximately 60,000 beneficiaries (Arnold and Ries 2009). The most common income generating activities observed so far have been firewood sale from deadwood, timber and construction materials as well as crafts such as baskets and thatching grasses.

2.3.4.3 Other Forest Conservation Initiatives

Protection of Trees

The Forest Act (2001) clearly states that all trees and plants/vegetation within 100 metres of a watercourse are protected. This vegetation may not be cut or destroyed without a license issued by a licensing officer. The license may require the licensee to plant trees in compensation for the ones he/she is planning to remove. Vegetation growing on dunes or in drifting sands has the same protection, while vegetation growing in gullies may only be removed if this is done to stabilise the gully. Certain plants and trees of high importance are also declared to be protected in Namibia with strict regulations governing their conservation, cultivation and use. The Tree Atlas of Namibia (Curtis and Mannheimer 2005) lists 58 large woody species that are protected in Namibia through various legislation including *Aloe dichotoma* (quiver tree), *Acacia erioloba* (camelthorn) and *Pterocarpus angolensis* (kiaat), which are among Namibia's most well-known tree species.

Knowledge Management

The National Forest Inventory Project is ongoing within the Directorate of Forestry. A project supported by the FAO to make use of remotely-sensed data for this purpose is ongoing and also assists in the inventory process required by community forests. Specific targets in this area from the NBSAP include the publication of the "Tree Atlas of Namibia" in 2005, which represents Namibia's first ever comprehensive guide to trees and shrub species and their distribution, and was a direct result of the Tree Atlas Project Working group founded during the NBP. The findings of the book have also been successfully integrated into Namibia's biosystematics website: www.biodiversity.org.na.

Tree-Planting Initiatives

The Directorate of Forestry has a long-standing programme of fruit-tree planting in the northern regions as a means of linking food security to environmental conservation. It is breaking new ground with a recently established training and planting programme for indigenous marula fruit trees.

Case Study 12: Planning for the Future: Marula (*Sclerocarya birrea*)

The marula fruit tree is found throughout Southern Africa and has played a key role in the lives of traditional communities in the North Central part of Namibia for many centuries. Its vitamin rich fruits are typically processed into juice and wine, while the inner kernels are pressed into an oil (ondjove), which has high anti-oxidant properties. It is believed there is much potential for the commercialisation of marula, both as a food and cosmetic oil, and also possibly as a juice and for extracts and flavourings. Marula oil is currently exported to a company in the UK for use in cosmetic oils, while a marula food oil product range was also recently developed. There is a well-developed infrastructure in place for the production of marula oil in the shape of the Eudufano Women's Cooperative (EWC) in Ondangwa, whose supply network includes some 3,500 rural women.

Seeing the commercial demand for marula products and the the fact that there was little natural regeneration of seedlings or young trees being planted, the directorate of forestry together with the EWC took the initiative to instigate a marula tree planting and training programme. Research suggests that Namibia has some of the best marula cultivars in the Southern African region. Forestry officials and communities set about identifying these genetically superior trees, from which scions are taken and grafted to established root stock. The grafted stock are then returned to communities so as to ensure the sustainable long term supply of top quality marula fruits and kernels to the EWC.

Integrated Fire Management

Vast areas of the Kavango and Caprivi regions are burnt every year by forest fires. Some of these fires are started naturally by lightning, but many are set by people intending to clear land for fields and to stimulate the growth of fresh grass. It has been determined that the frequency of fires is posing a serious threat to woody vegetation (Curtis and Mannheimer 2005), and by extension to the habitats and biodiversity of the north-east region.

The directorate of forestry, through its divisions of forestry management and forestry research has been engaged in tackling this problem for many decades. A huge amount of resources has been put into reactive measures such as strengthening firefighting capacity and associated resources such as fire trucks and fire breaks, which have placed a great burden on extension services and have been largely ineffective in terms of tackling the root causes of forest fires.

The directorate, in cooperation with the ICEMA Project and NGOs such as the IRDNC, has recently spearheaded an alternative more holistic approach known as integrated fire management in conservancies and community forests in north-eastern Namibia aimed at reducing wildlife hazard and enhancing land use, ecosystems and biodiversity. The main feature of the plan is a programme of controlled burning which is done in the early and mid dry season. A series of buffer burns are carried out to reduce the area affected by late and intense dry season fires which typically spread from eastern areas (MAWF 2009). Controlled burning is also conducted around settlements and cropping areas so that they are not damaged by the wildfires. These actions help to create a patchwork mosaic burn pattern, and the burned areas typically become high quality grazing areas that help to attract and sustain wildlife and livestock.

NBSAP Strategic Objective IV: Sustainable Land Management
Outcome 4.1 **Capacity to provide environmental information and policy advice to guide land use planning and the land reform process**
Progress ▪ SEAs have been undertaken for the 4 coastal regions, uranium mining in the Erongo Region (Central Namib area), and biofuels in the north-eastern regions ▪ Integrated Regional Land Use Plans (IRLUPs) are being developed for Hardap and Karas regions to help solve the problem of competing land uses ▪ Promoting Environmental Sustainability through Improved Land Use Planning (PESILUP) sub-project of the CPP is due to commence ▪ Each of Namibia's 12 Communal Land Boards received training on "Sustainable Development and Environmentally Sound Decision Making in 2007 and 2009 (MET in press) ▪ CPP guiding sustainable land management practices at two resettlement farms (CPP 2009)
Achievement of Specific Targets ▪ Guide illustrating positive and negative biodiversity/environmental impacts of various land uses compiled and distributed to decision-makers and practitioners ✕ ▪ 2 Permanent Secretaries' Roundtable meetings are conducted and one "Update" briefing sheet for parliamentarians produced on land reform and the environment ➲
Challenges ▪ Functioning decentralized planning framework not yet in place ▪ Capacity constraints at regional and local level ▪ Slow implementation of the PESILUP project
Outcome 4.2 **Biodiversity compatible land and resource uses and management systems identified and promoted**
Progress ▪ Wildlife re-introductions to conservancies have proved an important tool to promote wildlife-based land uses ▪ Private nature reserves are proving very successful at integrating low impact/high value tourism activities with local employment, thereby strengthening their case as a viable land use ▪ Management plans operational in state-protected areas ▪ Eco-tourism initiatives being promoted through the concessions policy and through park management plans. EIAs for tourism developments are also being facilitated by the concessions policy ▪ Communal conservancies and community forests are now recognized as viable biodiversity-compatible land uses

Achievement of Specific Targets

- Peer-reviewed bioregional and catchment map of Namibia prepared and distributed to relevant government offices and other bodies ✓
- 3 bioregional and catchment planning training courses successfully run ✓
- Integrated strategic plans for regions surrounding two protected areas published ✓
- Impacts of 3 new large-scale tourism enterprises on the environment and development of nearby communities are analysed and published ✓
- Communal Land Bill promulgated ✓
- Contradictory legislation on natural resource access rights harmonized ✓

Challenges

- Creating awareness among decision makers and the public at large about the economic value of protected areas as a form of land use
- Integration of protected areas and basin management approaches with regional development plans

Outcome 4.3
Biological Diversity in Agriculture managed through the adoption of ecologically, economically and socially sustainable agricultural practices

Progress

- Okashana 1, an early maturing and drought resistant seed variety of pearl millet, is being adopted in the north central regions and grown alongside other seed varieties as a security strategy against drought
- CONTILL project proving a successful approach to conservation farming
- Indigenous breeds of cattle and goats being promoted in the northern regions as part of the CPP's CCA sub-project
- Environmental Management Act stipulates that new agricultural developments require EIAs

Achievement of Specific Targets

- Namibian soil network develops a focal group on soil biodiversity ✗
- Lessons learned from current catchment management projects are documented and communicated to practitioners and decision makers ✓
- Focused study on farming systems compatible with biodiversity conservation initiated ➲
- Environmental Management Act promulgated ✓
- Appropriate sections on agricultural fencing are included in the Communal Land Reform Bill ✓
- Overview study of the increase/decrease and dynamics of bush-encroachment based on long term data completed ✓
- Field study elucidating the effect of frequent veld fires on biodiversity and soil fertility in Namibia's north-eastern regions completed and relevant information brochures published and disseminated to local resource users ➲
- Integrated Pest Management Unit fully operational and resourced ✗
- Comprehensive report on alien species of potential agricultural and economic value completed, including extensive environmental assessment ✗
- Booklet on innovative practices in environmentally sustainable management and biodiversity conservation published ✓
- All newly developed policies integrate principles outlined in this strategy once approved by cabinet ✗
- Evaluation of the impacts of this strategy on policy development conducted ✗

Challenges

- Human capacity constraints in the area of soil science
- Enforcement capacity for legislation such as the Environmental Management Act and Communal Land Reform Act
- Human and financial resource constraints in agricultural biotechnology research

Outcome 4.4
Sustainable forest management practices promoted

Progress

- Community forests now cover 1.6 million hectares of Namibia (Arnold and Ries 2009)
- Integrated fire management plans have been pioneered in north-eastern conservancies and community forests
- Estimated 100-120 charcoal producers in Namibia with 20% of the farms carrying Forest Stewardship Council certificates (Nangolo and Willemse 2009), one provision of which states that bush is to be harvested on a sustainable basis
- Tree Atlas of Namibia produced in 2004, and a Field Guide to Trees and Shrubs in Namibia produced in 2010

Achievement of Specific Targets

- A proposal for regulatory structure and processes for forest biodiversity conservation drafted ✓
- Strategy paper for forest conservation areas consultatively developed ✓
- At least 3 appropriate units for forest conservation in each political region in place ➲
- Data from all regions covered by the National Forest Inventory Project (NFIP) published ➲
- NFIP and Tree Atlas Project fully operational and documented ✓
- Gap analysis and a plan to fill gaps on forest biodiversity trends and patterns completed ➲
- Forest biodiversity indicators are agreed upon and streamlined with National Biodiversity Programme and SOER indicators ✓
- Forest areas are included into systematic biodiversity prioritization analysis ✓
- 60% of all planned community liaison officer posts filled with technically qualified personnel ✓
- Strategic plan for the highest priority research and monitoring programmes developed and agreed ✓
- Brochure on non-timber products and the ecological role of forests produced for schools and other target groups ✓

Challenges

- Financial and human resource capacity to sustain community forests in their formulative years
- Strict enforcement mechanisms to ensure adherence to forest management plans
- Ongoing promotion of alien invasive species through tree planting initiatives and nurseries

Outcome 4.5
Sustainable desert, savannah and woodland practices

Progress

- Long-term ecological research on desert and arid ecology is available at the Gobabeb Training and Research Centre
- Conservation management is well anchored in savannah and woodland areas through conservancies and freehold wildlife management units
- Resource harvesting in community forests based on sustainable harvesting allocations

Achievement of Specific Targets

- Implementation plan developed for an integrated policy framework on sustainable natural resource management and biodiversity conservation ➲
- Funding proposal to evaluate impacts on the natural resource base, ecological processes and biodiversity of different land uses and management systems completed ➲
- The Environmental Education and Information Services (MET) provides an interactive metadatabase platform for easy data exchange and storage ➲

Challenges

- Uranium mining and urban development and associated infrastructure in Central Namib: habitat destruction and demands on water and energy sources

- Bush encroachment in the Acacia savannah biome
- High level of pressure on ephemeral rivers

Outcome 4.6
Essential ecological functions and the biological diversity of Namibia's endemics rich mountain ecosystems protected and maintained

Progress

- Ranking of mountain ranges in terms of biodiversity richness and endemism carried out
- Inventories on arachnids and invertebrates carried out in the Gamsberg range
- 3 weather stations were set up on top of the Brandberg, Gamsberg and Auas mountains
- Biodiversity-rich mountain areas such as the Brandberg and Erongo mountains are now under the protection of communal conservancies
- Nature reserve established in the Otavi mountains, which has reintroduced species such as tsessebe and yellow-billed oxpeckers to the area (Nedbank 2009)

Achievement of Specific Targets

- Prioritized list of mountains targeted for in depth studies and a potential EONN site identified ✓
- Research and management framework drafted and agreed ✗
- Booklet and series of scientific papers on Namibia's mountain ecosystems published ✗
- Assess patterns of endemism on mountains ➲
- Mountain conservation priority areas determined based on research recommendations ✓

Challenges

- Chair of the Mountain ecosystems working group left Namibia in 2005 and not replaced, also funding cut after the NBP (Irish, pers. comm.)
- Data not obtainable from the mountain weather stations. It was to be downloadable by cell phone, but this was designed for South African network and is not compatible with the Namibian network. Estimated that this could be fixed at low expense (Irish, pers. comm.)

2.3.5 NBSAP STRATEGIC OBJECTIVE V: Sustainable Wetland Management

Wetlands are areas where permanent or temporary surface water occurs. In Namibia wetland systems are divided into five groups:
(i) **Marine Systems** (areas of shallow ocean and coastal waters including mudflats, lagoons and rocky shores)
(ii) **Estuarine Systems** (partially enclosed bodies of water receiving alternating freshwater inflows from rivers and tidal inflows from the sea)
(iii) **Riverine Systems** (including perennial rivers, floodplains, swamps/marshes, oshanas (shallow channels and pans forming the Cuvelai river system in the north-central regions) and ephemeral rivers
(iv) **Lacustrine Systems** (including pans and ephemeral rainwater pools; sinkhole lakes; dams/impoundments; artificial wetlands)
(v) **Palustrine Systems** (including vleis; springs and seeps)

2.3.5.1 Ramsar Sites

Namibia has so far declared four Ramsar wetland sites, and has also a special interest in the Okavango river delta Ramsar site, as this river basin is shared between Angola, Namibia and Botswana. Regular bird counts are undertaken at each of the Ramsar sites. These are a useful way to monitor specific wetlands as birds will react quickly to any negative changes in the health of the ecosystem through factors such as pollution or disturbance.

Walvis Bay Wetland

The Walvis Bay Wetland is considered the most important coastal wetland in Southern Africa and one of the top three in Africa (Bethune *et al* 2007). It comprises the lagoon – a shallow, sheltered wetland supporting more than 40 wetland bird species, as well as mudflats, shoreline, salt pans and sewage ponds. Regular bird counts of the wetland site have been conducted regularly since 1983, and the coastal area with an average of 450 birds per kilometre, has the highest linear count of any coast in Southern Africa (Shigwedha and Bethune 2006). These wetlands support 70-100,000 birds in winter and up to 250,000 in spring and summer. More than 1% of the world's population of 18 species of water birds, including 65-70% of chestnut-banded plovers, 70% of greater flamingos, 65% of lesser flamingos and 40% of the black-necked grebes are supported here. It is also an important nursery for African black oystercatchers (Bethune *et al* 2007). The site is potentially threatened by rising sea levels associated with climate change and the expansion of Walvis Bay port and town.

Sandwich Harbour

Sandwich Harbour covers an area of 16,500 hectares and is located approximately 60kms south of Walvis Bay and is protected within the Namib-Naukluft Park. Its shallow lagoon, salt marsh and intertidal mudflats also support a high diversity and sometimes higher number of wetland birds (175,000 mainly waders, terns, pelicans and flamingos) (Bethune *et al* 2009). This site is also threatened by climate change with a considerable reduction in the size of the northern wetland noted in recent years.

Etosha Pan

Namibia's only inland Ramsar site , the Etosha Pan covers an area of 5,000km^2. It is an ephemeral wetland relying on seasonal floodwaters rising from the Cuvelai river in Angola, which passes through a complex, delta-like network of interlinked shallow channels and pans in Northern Namibia known as oshanas before reaching the pan. Springs on the edge of the Pan are supplied with underground water from the pan itself and support a wide variety of wildlife especially during dry season. During the wet season, it supports significant numbers of blue cranes, which are globally threatened, as well as three globally near-threatened species: lesser flamingos, pallid harriers and black-winged pratincoles. Etosha supports more than 1% of the world population of white pelicans, greater flamingos, chesnutbanded plovers and caspian plovers. Twenty other bird species found in Etosha are either endemic to Namibia or have a restricted range (Bethune and Roberts 2007). Etosha pan falls entirely within the Etosha National Park, but there is concern that its source waters in the Cuvelai are not so well protected.

Orange River Mouth

In contrast to Namibia's other Ramsar sites, the condition of the Orange River Mouth site has declined markedly since it was proclaimed in the 1980s, when over 20,000 birds used to feed, roost and breed there (Bethune et al 2009). The decline has been blamed on the degradation of the salt marsh by mining activities and road constructions, as well as decreased flow levels. As a result, the South African part of this site has been placed on the Montreux Record, the list of Ramsar sites threatened by human activity.

Additional potential Ramsar sites have been identified but have not yet been designated. These include:

- Kunene river mouth (at least 72 species of wetland birds occur here including 12 Namibian Red Data species meking it the second richest coastal wetland for birds in Namibia (Molloy and Reinikainen 2003)
- Oshanas in the Cuvelai drainage system, could be linked to the existing Etosha Pan Ramsar site
- Cape Cross lagoons north of Swakopmund
- Swakopmund saltworks

- The Karstveld lakes and caves including Otjikoto and Guinas lakes and Aigamas cave
- Nyae-Nyae Pans system
- Okavango river – downstream of Mukwe to the Botswana border linking it to the existing Okavango Delta Ramsar site
- Zambezi River floodplains including the Linyanti swamp and Lake Liambezi
- Namibia's offshore islands (10 of these since been put under protection with the proclamation of Namibia's first MPA in 2009)

2.3.5.2 Integrated Water Resource Management

The cases of the Etosha Pan and Orange River Mouth illustrate the need for a basin management approach (even transboundary) to water resources management. While Namibia has developed a comprehensive wetlands policy aiming at the integration of sustainable wetland management, protection and conservation into decision-making at all levels, this has yet to be submitted to parliament for approval. In the meantime, the country is relying largely on the provisions of the Water Resources Management Act (2004) and the implementation of the SADC Protocol on Shared Watercourse Systems to ensure the wise management of its most precious resource.

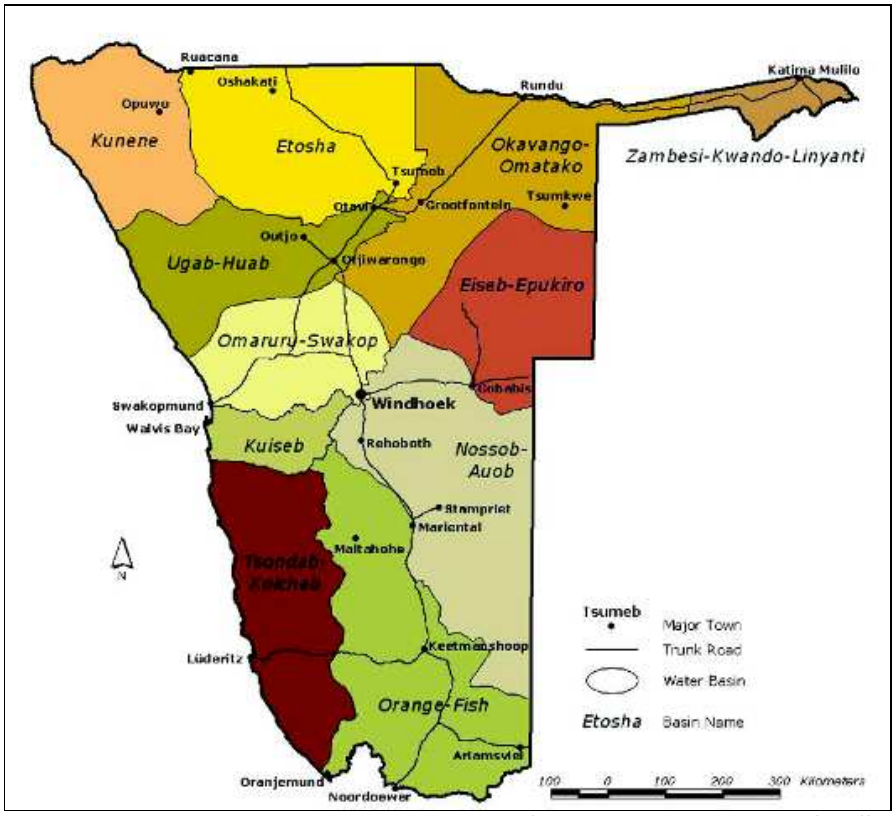


Fig 14: ***Namibia's demarcation into basin management units (Source: Bittner Water Consult CC (2004)).***

As outlined in section 2.3.2.1, basin management refers to the management of all activities aimed at enhanced functioning of a water basin. All land uses, natural processes and environmental disturbances

interact with the hydrological cycle and balance within a water basin. As a consequence, basins are considered to be the appropriate units for operational management of water and other natural resources. Functional responsibilities for integrated management have started to be vested in Basin Management Committees to be established in problematic basins in the country. The Cuvelai basin management committee was one of the first such committees to be established given the ecological, economic and social importance of this basin.

Iishana BMC Members	Main Functions	Challenges Identified
• Regional Councillors • Namwater (state water provider • Directorate of Rural Water Supply • Directorate of Extension and Engineering Services • MLR • MET • Communal Farmers • Commercial Farmers • Traditional Authorities • NGOs • CBOs	• Protect, develop, conserve, manage and control water resources within the Iishana sub-basin • Promote community participation in the above activities • Prepare a water resources plan for the Iishana sub-basin • Promote community self-reliance including cost-recovery for the operation and maintenance of waterworks • Monitor and report on effectiveness of policies and action in achieving the sustainable management of water resources	• **Rapid population growth** putting pressure on already scarce resources • **Overstocking:** increasing numbers of livestock with increasing population causing land degradation • **Variable Climate:** farming a high risk activity because of variable climate • **Water Payment:** Lack of understanding of the need to pay for water • **HIV/AIDS:** many orphaned kids being cared for by grandparents

Table 11: ***Example of a basin management committee from one of the sub-basins of the Cuvelai basin. They are proving a useful forum for addressing issues and problems affecting basins with the involvement of local communities and stakeholders (Source: MAWF 2007).***

2.3.5.3 Awareness of the ecological and economic functions of wetlands

The Namibian Wetlands Working Group has done much good work to raise awareness on the ecological and economic goods and services that wetlands provide. In furtherance of mainstreaming integrated water resources management, many informative articles from the working group have been published in relevant magazines and newspapers. The essential ecological services provided by wetlands are of ctitical importance to Namibia, the most arid country in Africa south of the Sahara. Some examples of ecological services provided by wetlands and their implications for Namibian society include:

- **Linear oases:** both perennial and ephemeral rivers passing through otherwise arid areas serve as sources of water and support linear strips of vegetation, which allows people and wildlife to survive there. In Namibia, they also serve as ecological corridors, allowing a great diversity of plants and animals to move into more arid areas, which explains the existence of the desert-adapted elephant and lion in north-western Namibia.
- **Flood attenuation:** wetland vegetation and floodplains regulate stream or river flow, which helps to control local and downstream floods. There is concern in Namibia that increased deforestation and land degradation (especially in the Cuvelai basin area) is contributing to the severe flooding events experienced over the last two years in Northern Namibia
- **Aquifer Recharge:** water from wetlands recharges adjacent underground aquifers, which serve as the main sources of water supply for the majority of Namibian people and industry. Increasing demands threatens the sustainability and integrity of these aquifers.

In addition, Namibia's wetlands are home to great biodiversity. In addition to the numbers and species of birds outlined above, wetlands provide a habitat for many of Namibia's charismatic wetland mammals as well as aquatic invertebrates, amphibians, fish and vegetation. Some specific examples include:

- **Aquatic invertebrates:** nearly 800 known to occur in Namibian wetlands
- **Amphibians:** 50 different species of frogs of which three are endemic
- **Fish:** Caprivi wetlands support 82 species of freshwater fish; Okavango wetlands support 79 species with the catfish (*Clariallabes platyprosopos*) and the spiny eel (*Aethiomastacembalus vanderwaali*) classed as red data species; Kunene river has 65 species, of which at least 5 are endemic (Bethune et al 2007)
- **Wetland mammals:** The natural range of wetland mammals such as Hippopotamus (*Hippopotamus amphibious*), puku (*Kobus vardoni*), red lechwe (*Kobus leche leche*) and Southern Reedbuck (*Redunca arundinum arundinum*) are mainly restricted to Namibia's north-eastern wetlands. Management plans are in place for all of these species (see MET 2005b and 2003)

Attempts to put a monetary value on the biodiversity, ecological services and other more direct benefits from wetlands has been done for the Okavango delta in Botswana but has yet to be attempted for any wetland in Namibia. Direct use values for the Okavango delta were estimated at approximately N$474 million with indirect use values estimated at N$146-487 million based on factors such as wildlife refuge, groundwater recharge, water purification, carbon storage and scientific and educational value (Bethune *et al* 2007). Currently the MET is conducting a study to assess the eco-tourism potential of the following wetlands in Namibia: Etosha Pan, Sandwich Harbour, Walvis Bay Lagoon, Lower Okavango, and the Zambezi-Chobe and Kwandu-Linyati systems (/Uiseb pers.comm.).

2.3.5.4 Internationally Shared River Basins

Given the high economic and ecological value of wetlands in the Southern African region and the fact that almost all major rivers are transboundary (all of Namibia's perenial rivers are transboundary), it makes sense for the involved countries to co-manage their river basins. This has prompted the establishment of international river commissions where Namibia cooperates with a number of countries to manage the following wetlands:

- Kunene River with Angola
- Kwando/Linyanti/Chobe System with Botswana
- Okavango River with Angola and Botswana
- Orange River with Lesotho, South Africa and Botswana (ORASECOM)
- Ongoing negotiations on the Zambezi River (ZAMCOM)

Out of these commissions, OKACOM, which was established in 1994, has been the most active and successful. The economic values quoted above for Botswana's Okavango delta depend on the pristine supply of waters from Angola and Namibia. This supply has seen various threats in recent years including proposals to canal water from the Okavango to distant water-stressed cities such as Windhoek, while an increasing focus on rural development by the Angolan government is likely to increase demand for large-scale irrigation systems, power projects and dams.

In recent years a permanent secretariat for OKACOM has been set up at Maun in Botswana (Bethune *et al* 2008). Annual meetings are held, and at the latest meeting, a Transboundary Diagnostic Analysis

(TDA) was presented, which is considered an important milestone towards developing a strategic plan for the river basin. The TDA is a careful scientific and technical assessment of the Okavango looking at water quantity and quality, the characteristics of ecosystems all along the river, as well as the needs and nature of the communities, politics and institutions the river connects. OKACOM meetings also provide a useful platform for the exchange of information and ideas between the different countries. Some priorities identified by Namibia from these meetings include:

- The need to institute a strategic planning process for the Kavango region. Much can be learned from Botswana's Okavango Delta Management Plan in terms of collaborative and participatory planning
- Within Namibia, the riverine forests along the Okavango, supports the highest biodiversity of trees in the country, and the river itself supports a rich biodiversity of fish. Riverine forests should be protected and hydrology, biodiversity and institutional task forces should be set up from the Okavango Basin Steering Committee
- Namibia should consider applying to the Ramsar Convention to extend the Okavango delta Ramsar Site across the border into Namibia (Bethune *et al* 2008).

NBSAP Strategic Objective V: Sustainable Wetland Management

Outcome 5.1
Essential ecological functions and the biological functions and the biological diversity of Namibia's wetland ecosystems protected and maintained

Progress

- Management plans for a number of wetland species have been developed
- All of Namibia's Ramsar sites are located in State Protected Areas and as result are protected to some extent from negative human disturbances
- Regular bird counts are conducted at each of Namibia's Ramsar sites and in other Important Bird Areas (IBAs)
- The importance of the ecological services provided by wetlands is being mainstreamed into policies and implementing agents such as basin management committees

Achievement of Specific Targets

- Draft wetlands policy submitted to cabinet ✗
- National database with core information on all major wetlands functional ➲
- Management plans for all four wetland sites approved ➲
- Focused "state of Namibian wetlands" research and monitoring programme incorporating an "Index of Biological Integrity" approach initiated ✗
- Wetlands component of a national training programme defined and initiated ➲
- Two wetland conferences held ✗
- Two relevant taxonomic posts are filled at the National Museum ✗
- Detailed maps of all wetland areas linked to wetlands database ➲
- Ecological requirements of wetlands systems fully reflected in all municipal, local, regional and national water supply plans ➲
- Ecological requirements of all Namibia's major perennial and ephemeral rivers, including the oshanas, are estimated and integrated in planning with extra guage stations in place for accurate monitoring and adaptive management ➲
- EONN monitoring sites established at all four Ramsar sites ✗
- National study on the ecological and socio-economic impacts of disturbed river flow regimes conducted ✓

Challenges

- Slow progress on development of a Wetlands Policy
- No formal management plans in place for Ramsar sites
- **L**imited monitoring activities conducted with the exception of bird counts

Outcome 5.2:
Additional wetland conservation areas created

Progress

- Additional wetland areas have been identified
- Discussions are currently underway to list the newly proclaimed marine protected area as a Ramsar Site of International Importance
- Transboundary diagnostic analysis completed for Okavango river basin, which is a key step in developing a strategic action plan for the whole basin
- Extensive study undertaken on environment flows in the Orange river basin

Achievement of Specific Targets

- Top 15 priority threatened wetlands identified and appropriately protected ➲
- Transboundary protected areas managed effectively (Orange, Kunene, and north-east perennial river catchments and wetlands) ➲

Challenges

- Lack of human resource capacity

Outcome 5.3:
Integrated land and water management promoted

Progress

- Namibia demarcated into basin management zones
- 3 basin management committees have been set up and are functioning
- Basin management committees have set up a forum for exchanging information, ideas and challenges relating to IWRM, from which action plans are being developed

Achievement of Specific Targets

- Regular joint planning and management at regional and national levels between the Directorate of Forestry, Department of Water Affairs and other relevant regulatory agencies initiated ➲
- Wetlands included in integrated landscape planning ✓

Challenges

- Basin demarcation is not aligned with regional boundaries, which has implications for the inclusion of wetlands in regional development plans
- Limited technical and management capacity at basin level
- Full implementation of the Water Resources Management Act of 2004

Outcome 5.4:
Awareness of wetland values and threats raised

Progress

- Popular wetlands booklet produced
- Attractive brochures of each Ramsar site produced
- Poster and booklet distributed to schools on Wetlands and Namibia
- Annual celebration of World Water day coordinated by the Department of Water Affairs within MAWF

Achievement of Specific Targets

- Parliament approves the consultative national wetlands policy ✗
- Popular booklet on Namibian wetlands and their ecological role produced ✓
- Resource economic valuation of Namibian wetland systems of different types and scales conducted, and results fed into policy revisions and awareness programmes ✓

2.3.6 NBSAP STRATEGIC OBJECTIVE VI: Sustainable Coastal and Marine Ecosystem Management

The National Biodiversity Strategy and Action Plan calls for the full and informed involvement of all Namibians in its implementation. The achievement of this ideal is most obviously evident in the way Namibia is going about implementing a sustainable approach to coastal and marine management. A coastal management policy white paper, SEAs for the entire coastal region and environmental management plans are at various stages of development with the full involvement of local communities, local municipalities, regional councils and line ministries.

Coastal development was identified as one of the greatest threats to biodiversity conservation in Namibia in the Integrated State of the Environment Report of 2006. This threat has arguably increased since then with major increases in the number of uranium mines (and more in the pipeline), increasing tourist numbers and associated activities and increasing urban populations and demands on the resource base. Namibia has realised that an integrated approach is needed to counter the impact of

these threats on the coastal zone, which contains some of Namibia's most senstive ecosystems and biodiversity-rich environments.

The MFMR, MET, MLR and MRGLHRD with coordination and assistance provided by the BCLME and NACOMA projects have set in motion the process of conserving biodiversity in the context of these different threats. Particular progress has been made in recent years in increasing the area and number of terrestrial and marine ecosystems of biodiversity importance under effective management, and in incorporating biodiversity conservation into planning, policy, institutions and investments at national, regional and local levels.

2.3.6.1 Increase in the coastal zone area under formal protection

The proclamation of the Sperrgebiet in 2008 and the upgrading National West Coast Recreational Area to national park status (Dorob national park) means the entire Namibian coastline is now protected through a network of national parks. This means that a huge variety of desert landscapes and scenery, habitats and biodiversity are now under conservation management. It is envisaged that this network of parks will be consolidated into one coastal national park, which will incorporate (from Tarr 2009):

- 76% of the Namib Desert Biome
- 3% of the Nama Karoo Biome
- 85% of the Succulent Karoo Biome
- 99% of the Coastal Biome
- Three Ramsar Sites (Walvis Bay Lagoon, Sandwich Harbour and the Orange River Mouth)
- Eight Important Bird Areas (IBAs) (Kunene river mouth, Cape Cross lagoon, Namib Naukluft National Park, Mile 4 Saltworks, 30km beach (Walvis Bay to Swakopmund), Sandwich harbour and the Sperrgebiet) and two Important Plant Areas (IPAs) covering the lichen fields in the Central Coastal Area and the Sperrgebiet. These count as key biodiversity areas of global significance for biodiversity conservation
- Shared borders with the 585,000ha Iona Park in Angola (north) and the Richtersveld National Park in South Africa (south)
- Shared borders (over 80% of the park) with communal conservancies, wildlife, private parks and land managed for wildlife and tourism. Huge opportunities for collaborative management practices and links to other national parks such as Etosha.

Marine Protected Areas (MPAs)

The process of establishing MPAs began in 2005 when the Directorate of Resource Management within MFMR mandated the identification of MPAs in Namibia. The purpose of MPAs is to protect important spawning and nursery grounds for fish and other marine resources such as rock lobster as well as sensitive ecosystems and breeding areas for seabirds and marine mammals. Environmental and legal specialists and scientists were brought together in 2005 to discuss legal and scientific issues relevant to the identification and declaration of MPAs, and a phased approach to MPA identification and declaration was adopted prioritising areas in critical need of conservation (MFMR 2009). The phased process aimed to:

- Identify priority representative areas to be protected, for which scientific information is available, on which to base sound management decisions
- Apply a multi-zoned approach in delineating areas with different management objectives
- Avoid conflict between different use stakeholders
- Create rational management boundaries

Based on this process and principles, Namibia's first MPA was gazetted in February 2009, adding a further 12,000km^2 to the protected area network. The MPA covers over 400kms of the coastline and stretches for 30kms into the Atlantic Ocean. Some key features of the MPA relevant to biodiversity conservation are listed below (from MFMR 2009):

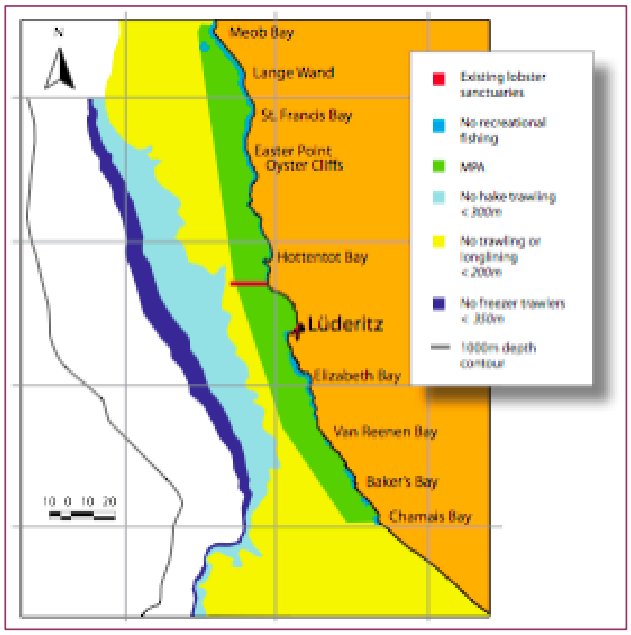


Fig 15: ***Namibia's first MPA and some of the regulations for the area (Source: MFMR 2009)***

- 14 seabirds breed in Namibia, 11 of them on the protected islands and islets of the MPA including Namibia's most seriously threatened seabird species: African Penguins (*Spheniscus demersus*), Cape Gannets (Morus capensis) and Bank Cormorants (*Phalacrocorax neglectus*)
- MPA includes an all inclusive buffer zone subdivided into 4 levels of increasing protection. Rock-lobster sanctuaries and a line-fish sanctuary are included in the highest zone of protection
- Three cetaceans use the coastal waters of the MPA for breeding (Southern right whale and Heaviside's Dolphin, which is endemic to the Benguela current) or as a migratory corridor (humpback whale). Other species occur regularly within the MPA including the dusky dolphin, minke whale, southern right whale dolphin and the killer whale
- The MPA is divided into zones of increasing protection:
  Zone 1: Includes the entire island's MPA in a blanket of environmental protection
  Zone 2: Stricter conservation conditions applied to near- and 0n-shoe mining areas, up to a depth of 30m
  Zone 3: Protects a perimeter of 120m (or less in specific cases) around each island, islet or rock
  Zone 4: Represents the highest protection status with specific conditions assigned individually to each island, islet or rock as well as to rock lobster sanctuaries and a line fish sanctuary north of the MPA

A management assessment tool is currently under development for the MPA, while almost all of Namibia's coastal national parks have shown improved management performance over the period 2004-9 (see section 2.3.1.3). All of Namibia's seven coastal parks have developed management plans.

2.3.6.2 Environmental Management Plans for Coastal Towns

The Namibian coast is very sparsely populated, however it is dotted by a number of coastal towns, most of which serve as development hubs in the region and are increasing rapidly in population and demands for services. The principle towns are Walvis Bay (main port, hub of fishing industry), Swakopmund (regional centre, major tourist destination and closest large settlement to the booming uranium

industry), Henties Bay (popular tourist destination, and also close to the uranium mining hub), Lüderitz (major fishing port, tourist destination and close to mining activities) and Oranjemund (diamond mining hub).

In addition these coastal towns are all situated adjacent to national parks and sensitive marine environments, which makes them an inherent threat to biodiversity. It is thus of vital importance that issues affecting the environment are given high priority such as waste and water management; energy consumption; and habitat destruction. Namibia's major port Walvis Bay, which also lies adjacent to the Walvis Bay Lagoon Ramsar Site, already has a Local 21 environmental management initiative in place, and it is necessary for the other towns to follow suit.

The NACOMA project has thus initiated a process of developing environmental management plans (EMPs) for each of the main coastal towns. Members of the local community are invited to identify the negative environmental impacts of activities on their towns together with municipalities and other stakeholders, and to come up with possible solutions and creative measures to minimize these impacts. This process is currently in its early stages, however workshops have been held in each of the coastal towns and a number of problem areas and possible solutions have been identified. These have varied between the towns but have included:

- Littering, illegal dumping and inadequate waste management
- Excessive use of water and electricity (no metering system in place). Also water leakages.
- Riverbed degradation from sand-mining, dams, and firewood collection
- Off-road driving and quad-biking in the Namib desert, lichen fields, beaches and river beds
- Ignorance of environmental issues (SAIEA 2010)

The task now is to establish and enforce EMPs that tackle the root causes of the factors outlined above. Encouragingly the Swakopmund Municipality has already embarked on a recycling proect, the first of its kind in Namibia, which aims to:

- Produce a by-law that will guide implementation of a levy per plastic shopping bag issued
- Reduce the negative effects of plastic bags and other pollutants on the environment (the consumption of plastic bags by albatrosses has been identified as a major killer of albatross chicks, while plastic bags are also often blown inland by coastal winds blotting the otherwise pristine desert landscape)
- Raise awareness of the environment and to encourage recycling
- Put 50% of the funds generated from the sale of plastic bags towards an environmental fund to be managed by the council
- Design and manufacture recycling depots and to place them at suitable areas (Namibia Coastal/Marine Bird News 2010)

2.3.6.3 Strategic Environmental Assessments in the Coastal Regions

One of the MET's strategic objectives is for SEAs to become the foundation for environmental protection and management, and for mainstreaming environmental concerns into policies, plans and programmes. They also represent an important means promoting public participation in decisions affecting the environment. This objective is being realized in the Namibian coastal zone, where SEAs have been conducted for each of Namibia's four coastal regions and combined into one SEA for the entire coastal zone, which was published in May 2010. A separate voluntary pilot SEA has also been carried out on the increasing uranium mining and prospecting activities in the Erongo. The recommendations from these

SEAs are being incorporated into Namibia's coastal zone management policy, which is currently being developed.

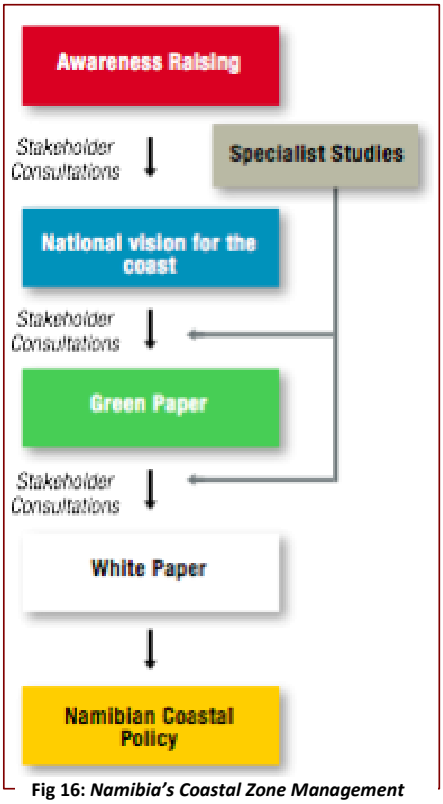


Fig 16: ***Namibia's Coastal Zone Management policy process*** **(Source: NACOMA 2009b)**

2.3.6.4 Coastal Zone Management Policy and Integrated Coastal Zone Management

The NACOMA Project, funded by the GEF and MET, was established in 2006 and is due to run until 2011. Its main objective is to strengthen conservation, encourage sustainable use of the coast's natural resources and to mainstream biodiversity conservation in coastal and marine ecosystems. The project is playing a key role in facilitating and coordinating participation and inputs from various stakeholders in coastal zone management. A Project Steering Committee guides MET and its project team in the implementation of the project. It comprises of MET (chair) and MRLGHRD (deputy-chair), MFMR, MME, MAWF, MWTC, NPC and Chief Executive Officers of Kunene, Erongo, Hardap and Karas Region.

An Integrated Coastal Zone Management Committee, constituted by the coastal regions, addresses issues of coastal conservation, management and planning and serves as a high-level overall supervisory and advisory body to the project and liaises with the Steering Committee. A special Contingency Management Committee was also set up to address specific environmental problems in the dune belt and coastal area between Swakopmund and Walvis Bay (see case study 3). This is the most frequented and most popular area along Namibia's coast. This forum consists of representatives from Erongo Regional Council, the municipalities of Walvis Bay and Swakopmund, the MET, MFMR, other line Ministries, the Coastal Tourism Association of Namibia, adventure sports operators and concerned individuals.

The NACOMA project is giving great impetus to the development of Namibia's first coastal zone management policy. During the intensive and extensive policy formulation process with civil society, scientists and government, the following joint vision for Namibia's coastal zone was formulated:

"We, the Namibian people want our coastal areas used in a wise manner, so that social, cultural, environmental and economic concerns are carefully balanced with the overall aim of sustainability in mind, and conservation and economic progress going hand in hand in an integrated manner. All our resources should be developed to their full, including our natural and human resources, with fair and transparent access to opportunities for all, now and into the future" **(NACOMA 2009b)**

The process is currently at white paper stage, and one of the most important aspects of the policy is that it will lay the basis for an ICZM system for Namibia and the creation of the necessary management mechanisms and capacity. The coastal zone in Namibia has historically been subject to overlapping

governance of local, regional and central governments, resulting in inter-agency conflicts and unclear policy regarding resource development, management and environmental protection. The ICZM approach clarifies and harmonizes the roles, responsibilities and mandates of government institutions involved in biodiversity conservation and coastal development.

Politicians and government officials, who will be responsible to ensure that Namibia's coast is managed an integrated way, have recently been equipped with the necessary knowledge and skills. A total of 307 certificates were granted to officials trained in 2009 in *Integrated Coastal Zone Management, Resource Economics, Governance in Integrated Management, Tools for Sustainable Coastal Management, Data Management* and *Data Analysis and Strategic Planning* (MET in press).

2.3.6.5 Information and Awareness of Coastal and Marine Biodiversity

Excellent progress has also recently been made with regard to raising awareness of coastal and marine biodiversity and the importance of the sensitive coastal zone to Namibia.

- In July 2008 the Coastodian Awareness and Education Campaign was launched under the slogan: *Taking care of the coast, taking care of the future*. This campaign extended to corporate institutions in 2010 and they have now become "Corporate Coastodians"
- The NACOMA project launched its own website: www.nacoma.org.na. from where the latest coastal information, scientific and investigative reports as well as policies can be downloaded
- A resource book for upper-primary learners and teachers was published in 2009 and is being introduced into eight coastal schools
- A School Essay Competition targeted at Grade 10 and 11 Learners in the coastal regions. This competition was launched in the beginning of 2010, inviting learners to highlight the threats facing the Namibian coast and propose actions and policies to preserve the life in and around beaches, the desert, wetlands, riverbeds and sea.
- A film, *The Namib Desert Coast*, has been produced and distributed to raise further awareness
- Several clean up campaigns took place along the coast. The latest was held in September 2009 during International Coastal Clean Up Day when 450 learners from schools in the Erongo and Karas regions collected more than 3 tons of rubbish
- Funds and donations have been made available for monitoring activities during holiday periods, the erection of signage at conservation areas, fence repairs, free premises for public consultative meetings and free airtime for game wardens on duty at the coast during the holidays.

NBSAP Strategic Objective VI: Sustainable Coastal and Marine Ecosystem Management
Outcome 6.1: **Impacts of resource use activities on coastal and marine environments evaluated and reduced**
Progress ▪ Strategic Environmental Assessments have been conducted for each of the four coastal regions with the recommendations of each included into the Coastal Zone Management Policy White Paper ▪ Environmental Impact Assessments now compulsory for all new developments ▪ Environmental Management Plans are under development for the coastal towns of Lüderitz, Swakopmund, Walvis Bay and Henties Bay ▪ Management Plans have been developed for each of Namibia's coastal parks ▪ Development of the Marine Tourism Association Namibia and an internal "code of conduct" to minimise the impact of the marine tourism industry on whales and dolphins

- Water consumption efficiency of the Rössing Uranium mine has been substantially improved
- Regulations have been developed to limit the damage from off-road driving in the sensitive Central Namib area
- Study carried out on sustainable tourism and natural resource use in coastal areas
- Management effectiveness of the vast majority of coastal national parks improved from 2004-2009 (see section 2.3.1.3)

Achievement of Specific Targets

- Information is synthesized and research and monitoring gaps are prioritized in support of the sustainable use of marine and coastal resources ✓
- Indicator data contributed to the State of Environment Report ✓
- Long term impacts of the use of marine and coastal resources analysed and a monitoring mechanism established ➲
- New regulations relating to the Marine Pollution (Marpol) Agreeement are promulgated ➲
- Coastal and Marine Biodiversity Coordinator (at the National Marine Information and Research Centre) appointed to manage implementation of this action plan ➲
- At least two additional national-scale co-management fora are held ✓

Challenges

- Insufficient capacity relating to environmental impact assessments
- Slow MET decentralisation process and building capacities of biodiversity conservation-related responsibilities among coastal regional councils and local authorities
- Extensive nature of the coastal zone necessitates the identification of hotspots to focus on and to test theories of biodiversity conservation
- No legal framework governing the interaction of humans and cetaceans with respect to hunting, formal tourism, stranded animals etc.

Outcome 6.2:
Policy and legislation brought in line with the UNCBD and legal framework for aquaculture activities strengthened

Progress

- A Participatory Coastal Zone Management Policy White Paper has been developed. Has also been debated by a high level cabinet workshop in 2010
- The policy provides a framework on how the sensitive stretch of land and sea should be managed to ensure that its biodiversity is preserved and that sustainable development takes place in harmony with the natural environment
- Policy and Legal Working Group has been set up and is playing an active role in policy development
- Inland Fisheries Resources Act promulgated in 2003 to provide for the conservation and protection of aquatic ecosystems, the sustainable development of inland fisheries resources and the control and regulation of inland fisheries
- Inland Fisheries Resouces Act promotes the sustainable harvesting, management, conservation and protection arrangements for freshwater fish and their ecosystems in accordance with international law, agreements and arrangements to which Namibia is a party

Achievement of Specific Targets

- Policy and legislation reviewed and revised, and detailed aquaculture regulations promulgated ✓
- Zonation and environmental impact assessment procedures routinely done and administered within six months of all applications ➲

Challenges

- Sustainability mechanisms need to be developed for the core areas of the NACOMA project. Integration of the

steering committee into future coastal management structues

- Clarification of roles and responsibilities of the relevant institutions under the new coastal policy with regard to the conservation and sustainable use of biodiversity
- Strict enforcement measures against alien invasive species

Outcome 6.3:
Existing marine protected areas (MPAs) maintained and new areas proclaimed

Progress

- Namibia's first MPA was gazetted in February 2009, covering 12,000km^2 including 10 islands and 8 islets (MFMR 2009)
- MPA based on studies and discussions undertaken over a 5 year period by marine scientists, biologists, environmentalists, geologists and legal experts
- Namibia is focusing on consolidating the management of its first MPA before proclaiming new ones. Management plan for the MPA has been finalised and the adapted NAMETT tool is being developed for the MPA
- Links between the MPA and Sperrgebiet National Park

Achievement of Specific Targets

- Protective regulations in place for MPAs ➲
- Implementation plan for MPAs drawn up and MPAs designed and proclaimed ✓
- At least 4 unexploited unexploited sanctuary areas are established as scientific baseline sites and integrated into monitoring activities ➲
- All MPA management plans harmonized with those of adjacent reserves ➲

Challenges

- Concessions in the MPA
- Data collection needs and human and financial capacity constraints
- On-the-ground cooperation between MFMR and MET
- Financial sustainability of the management of the MPA

Outcome 6.4:
Pollution of coastal areas reduced

Progress

- The Environmental Management Act (2007) is guided by the polluter pays principle and promotes the reduction, reuse and recycling of waste
- Swakopmund Municipality is introducing a levy on plastic shopping bags and a broader recycling initiative

Achievement of Specific Targets

- Namibia is fully compliant nationally with Marpol ➲
- Strenghtened, reliable early warning system for harmful algal blooms and pollutants functional ➲
- Data on the spread of invasive ballast-water and other organisms are synthesized for State of the Environment Reports ➲

Challenges

- Harmful algal blooms are a particular challenge to the nascent mariculture industry
- Pollution and Waste Management Bill still in draft form
- Lack of enforcement capacity to control pollution

Outcome 6.5:
Taxonomic collections and databases strengthened

Progress

- BCLME project has improved greatly taxonomic research into the Benguela ecosystem
- Coastal Biodiversity Status Report due for publication in 2010
- Attempts to identify MPAs has stimulated scientific research into marine ecosystems including the little understood deep-water benthic species

Achievement of Specific Targets

- Central specimen collections are fully computerized and copied to the national museum ➲
- A plan for filling prioritized gaps for deep benthic water species is agreed with specialists and stakeholders ➲
- At least 2 trained taxonomists specialized in marine and coastal organisms working with the national museum and/or MFMR ✓

Challenges

- Little collaboration between MFMR and the national museum

Outcome 6.6:
Marine bioprospecting controlled and promoted

Progress

- Regulations pertaining to the recently launched MPA constitutes the main progress relating to this area

Achievement of Specific Targets

- Focused study of marine bioprospecting in Namibia completed ✗
- Consultative strategy for the promotion, collaboration and regulation of bioprospecting activities ready ➲

Challenges

- Limited capacity to enforce marine bioprospecting regulations

Outcome 6.7:
Integrated Coastal Zone Management strengthened

Progress

- Integrated Coastal Zone Management Committee (ICZMC) has been set up
- Provision for an ICZM approach is made in the Coastal Policy White Paper
- A Scientific Group provides scientific input as requested by the NACOMA project steering committee, ICZMC or MET/project team and was put in place to assist in screening matching grant proposals, develop indicators for coastal zone management monitoring mechanisms and to contribute to targeted capacity building efforts
- A total of 307 certificates were awarded to officials trained between June and October 2009 in Integrated Coastal Zone Management, Resource Economics, Governance in Integrated Management, Tools for Sustainable Coastal Management, Data Management and Data Analysis and Strategic Planning (MET in press)

Achievement of Specific Targets

- Regular ICZM co-management meetings with all coastal regions held ✓
- Specific biodiversity activities are agreed with coastal regional councils and integrated into the coastal and marine biodiversity conservation and management project ✓

Challenges

- Financial sustainability of the long term ICZM process
- The need for clarification of roles and responsibilities under ICZM

Outcome 6.8:
Information on and awareness of coastal and marine biodiversity improved

Progress

- Coastodian Awareness and Education Campaign launched in July 2008 with the logo and slogan: *Taking care of the coast, taking care of the future*. Campaign now includes a Corporate Coastodian Programme in mid-2010
- A resource book for upper-primary learners and teachers was published in 2009 and is being introduced into eight coastal schools
- The NACOMA project has developed its own website: www.nacoma.org.na, The latest and focused information, as well as various scientific and investigative reports and policies can be downloaded there

- A film, *The Namib Desert Coast*, commissioned by NACOMA to raise further awareness, is also available on the NACOMA website
- A School Essay Competition targeting Grade 10 and 11 Learners in the four coastal regions. This competition was launched in the beginning of 2010, inviting learners to highlight the threats facing the Namibian coast and propose actions and policies to conserve the life in and around beaches, the desert, wetlands, riverbeds and the sea
- Several clean up campaigns have been initiated along the coast. On the 18th and 19th September 2009, as part of the International Coastal Clean Up Day, 450 learners from schools in the Erongo and Karas regions collected more than 3 tonnes of rubbish
- Funds and donations solicited for monitoring activities during holiday periods, erection of signage at conservation areas, fence repairs, and for providing free premises for public consultative meetings and free airtime for game wardens on duty at the coast during the holidays

Achievement of Specific Targets

- Public information officer appointed at the National Marine Information and Research Centre and public awareness programme established ➲

Challenges

- NACOMA is the main agent for raising awareness of coastal issues and its initiatives need to be continued after the lifecycle of the project

2.3.7 NBSAP STRATEGIC OBJECTIVES VIII AND IX: Namibia's Role in the Larger World Community and Capacity Building for Biodiversity Management

These two strategic objectives are included as separate chapters in Namibia's NBSAP but are very much cross-cutting issues that have largely been dealt with in sections 2.3.1-2.3.6. The challenges and progress made in this strategic areas are largely reported on in those sections. Nonetheless the achievement of specific targets relating to these areas will be addressed in this section to allow for a complete overall assessment of the NBSAP.

NBSAP Strategic Objective VIII: Strengthening Namibia's Role in the Larger World Community
Outcome 8.1: **Political will and commitment to the implementation of Namibia's obligations with respect to international treaties supported**
Achievement of Specific Targets • Kyoto and Cartagena protocols ratified and a re-evaluation of Namibian capacity to implement other biodiversity-related conventions and protocols completed ✓ • The Directorate of Environmental Affair's International Conventions and Related Programmes Unit is fully established and supported; and implementation plans of national programmes supporting the CBD, UNFCCC, CCD are on track ✓ • Environmental Management Bill enacted with full staffing for effective implementation ➲ • Pollution Control and Waste Management Bill enacted with full staffing for effective implementation ✗ • Biosafety Bill enacted with full staff for effective implementation ✓ • Access to Genetic Resources and Related Traditional Knowledge Bill enacted with full staff for effective implementation ➲ • Dialogue underway with relevant partners in the trade, environment, agriculture, mining and other sectors is underway on streamlining of the relevant policies that impact upon trade and the environment ✓ • SADC wide harmonization of biotrade and biosafety frameworks is underway ➲ • Gaps in the co-management of shared resources requiring bilateral or multilateral agreements consultatively

identified at SADC or bilateral fora ✓
- A course for international negotiators regarding the issues of trade, environment and sustainable development is formulated and implemented with at least 10 negotiators trained ✗

Outcome 8.2:
International assistance wisely used, while improving national capacity for sustainable environmental management

Achievement of Specific Targets
- An effective consultation and participation mechanism regarding the negotiation of international assistance in place ✓
- Collaboration with the NPC and other relevant stakeholders on improving decision-support procedures established ➲
- Environmental Investment Fund reaches N$30 million by 2005 ✗
- Concerted dialogue with the NPC and Ministry of Finance on national budget reorientation begun by 2003 ✓
- Mentorship programme established and functional to train young Namibian professionals ➲
- At least 5 new collaborative international biodiversity conservation and research projects established and functional ✓

Outcome 8.3:
Namibia's role in international collaboration in biodiversity research and management strengthened in SADC, Africa and beyond

Achievement of Specific Targets
- Namibian centres such as Gobabeb Training and Research Centre and Henties Bay centre are financially supported to increase research-based training opportunities in biodiversity conservation by at least 50% ➲
- Full engagement with SADC-wide, ecosystem-wide or global programmes in at least 6 areas ✓
- A "best practice" case study of Namibia's experiences and activities in biodiversity management including biotrade published and distributed ✓
- Ai-/Ais Richtersveld TBPA formulated and implemented common management plans and goals ✓
- Sperrgebiet proclaimed as a multi-zoned national park and incorporated in this TBPA ✓
- A decision is taken by Angola and Namibia after full stakeholder involvement on the establishment of the Skeleton Coast-Iona TBPA ✓
- At least one further proposal consultatively discussed with all stakeholders by 2004 ✓

NBSAP Strategic Objective IX: Capacity Building for Biodiversity Management in Support of Sustainable Development

Outcome 9.1:
Public awareness of biodiversity conservation and sustainable resource use promoted

Achievement of Specific Targets
- Awareness and education coordination outsourced ✗
- Detailed creative awareness strategy developed with first visible outputs by 2003 ➲
- An updated directory of organizations is developed ✓
- Regular feedback meetings with partners implemented ➲
- Impacts of industry, producers and users on biological resources and mitigation measures to address potential impacts are identified and publicised ✓
- Measures to institutionalise awareness creation of decision makers regarding biodiversity, sustainable use,

conservation and management such as roundtables, "update" briefings and vists identified ➲
Outcome 9.2: **Capacity to manage biodiversity and sustainable development in Namibia is built**
Achievement of Specific Targets • The effectiveness of target-specific approaches for creating awareness of biodiversity issues are tested and new approaches identified and developed for different groups ➲ • UNAM-Humboldt University biodiversity management and research masters programme is established and fully functional ✓ • User groups (for biosystematics information) and their information requirements are identified and prioritised ➲ • Central specimens held at National museum, MET, MFMR and other institutions fully computerized ✓ • Public has ready access to taxonomic databases ✓ • Standards and protocols regarding the collection of biosystematics information set with ongoing consultation with all stakeholders ➲ • Needs assessment of skills and capacity in the biodiversity conservation field and training opportunities made available; target groups identified and a dissemination strategy developed ✓ • Analysis of potential impacts of HIV/AIDS is finalised and integrated into training strategies ✓ • All relevant activities in this document affected by HIV/AIDS reevaluated annually ✗ • Management structures strengthened in order to support the national strategic response to HIV/AIDS ➲
Outcome 9.3: **Effective participation of disadvantaged groups in implementing this biodiversity strategy promoted**
Achievements of Specific Targets • Regular regional fora for rural women to exchange experiences, best practices and knowledge initiated ➲ • At least 80% of all senior biodiversity-related positions are filled by appropriately qualified professionals from previously disadvantaged groups ✗ • Output from young professionals from existing training programmes and activities doubled and/or new activities designed ➲
Outcome 9.4: **Communities strengthened to participate as equal partners, eg. In biotrade and bioprospecting**
• Awareness workshops on the provisions of the Access to Genetic Resources and Related Traditional Knowledge bill held ✗ • Existing customary codes of ethical conduct are identified and appropriate models of conduct for research, access to knowledge, and information management on indigenous knowledge systems developed ➲
Outcome 9.5: **Namibian centres of excellence in biodiversity fields are strengthened and developed**
• Significant increases in government and external core funding for these centres ➲

2.4 Assessment of Effectiveness of NBSAP

NBSAP Targets reached	No. of Targets	% Breakdown
Fully Achieved	102	42.2
Partially Achieved	93	38.4
Not Achieved	47	19.4
Total	242	100

Table 12: Summary of NBSAP targets achieved.

Based on the table above, it can be assumed that the NBSAP has been effectively implemented in Namibia. Some 42% of the specific targets in the NBSAP were fully achieved, while over 80% of all

targets were at least partially achieved. The achievement of so many of the targets, in the absence of an official monitoring and evaluation mechanism, represents a remarkable success. In addition the NBSAP was the first of its kind in Namibia and laid out a very ambitious and wide-ranging set of specific targets, which required close cooperation and action from a very diverse number of stakeholders. A number of MET and other government activities have been implementing elements of the NBSAP and a suite of internationally supported programmes have been directly implementing the key priorities and activities as laid out in the NBSAP.

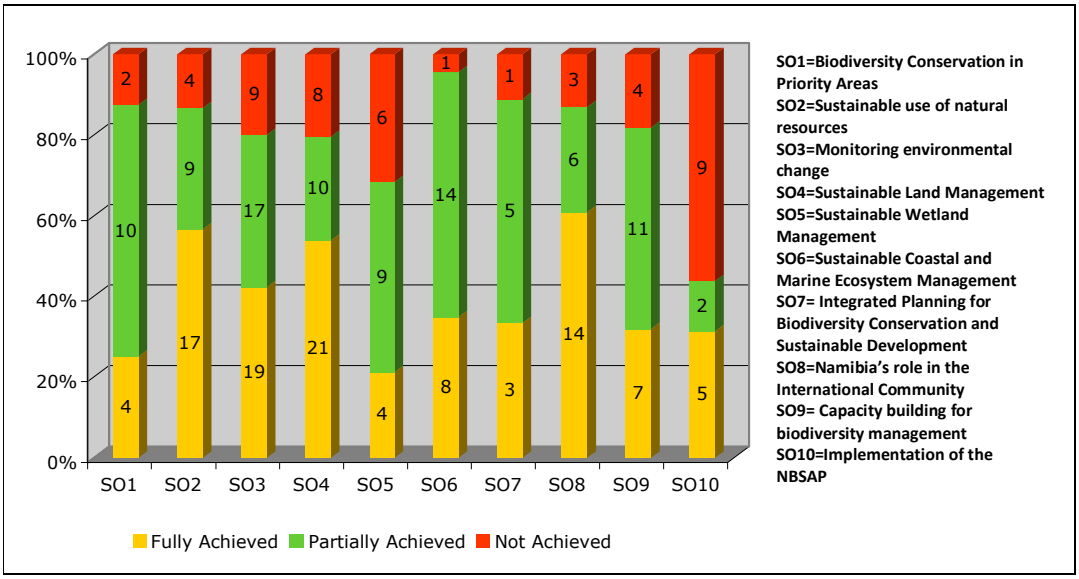


Fig 17: Breakdown of NBSAP specific targets achieved as per strategic objective.

Figure 17 allows for a more analytical breakdown of Namibia's performance in the implementation of its NBSAP. It should however be noted that the indications provided by this diagram are dependent on the measurability, practicality and quality of the particular targets set and thus may not be a true representation of the state of progress relating to each strategic objective area. In addition the timeframe applied to the specific targets was not strictly followed in this report owing mainly ot difficulties in data assimilation and the ongoing nature of certain targets.

Nonetheless particularly encouraging results are evident in the areas of sustainable natural resource use, sustainable land management and Namibia's international role in terms of biodiversity conservation and environmental management, where over 50% of specific targets were adjudged to have been fully achieved. Biodiversity conservation in protected areas; sustainable coastal and marine ecosystem management; integrated planning for biodiversity conservation and sustainable development; and capacity building for biodiversity management were also areas in which excellent progress was made with over 80% of specific targets at least being partially achieved. The main areas of concern indicated by figure 19 in ascending order are environmental monitoring, sustainable wetland management and the implementation of the NBSAP.

Figure 17 thus presents a seemingly paradoxical situation whereby many of the operational targets of the NBSAP have been well achieved inspite of a planned mode of implementation, which has not

worked out optimally in practice (see further details in the table below). In-depth interviews with key stakeholders involved in the formulation and implementation of the NBSAP, shed further light on this paradox. During Namibia's National Biodiversity Programme, which preceeded the NBSAP, a number of technical working groups were set up to tackle specific aspects of biodiversity and played a key role in the formulation of the NBSAP. Overall these working groups proved a successful platform and it was intended that they would be carried over to help fulfill the objectives of the NBSAP. However with the end of the NBP and associated funding and the departure of some key personnel, the vast majority of these 21 working groups ground to a halt. Only the wetlands working group and a number of other offshoot working groups such as the crane action group remain active today.

In addition the NBP and activities of the working groups had been coordinated by a multi-stakeholder National Biodiversity Taskforce (BDTF). It had been planned that the BDTF would be replaced by a fully staffed and functional NBSAP implementation unit housed within the MET. This unit never materialised, which has had the result that many NBSAP activities were susequently implemented in relative isolation and without proper coordination or review.

Nevertheless the NBSAP continued to serve as an important reference document for relevant ministries and has been instrumental in focusing investment from GEF-funded projects and international assistance into key biodiversity target areas. The MET's strategic plan from 2007/8-2011/12 is closely aligned to that of the NBSAP. The implementation of strategic MET objectives such as the "management of rare, endangered and endemic and valuable species and habitats" and the "promotion of CBNRM on freehold and communal land to conserve biodiversity outside protected areas" has focused resources and efforts on these areas, thereby also contributing to NBSAP target areas. Other examples of government initiatives guided by the NBSAP include the Forest Act of 2001, which paved the way for the establishment of community forests, and the Aquaculture Act (2002) which lays down strong guidelines for environmental sustainability and measures against invasive species and genetically modified organisms. While the MET and other government insitutions have thus laid the groundwork for the conservation and sustainable use of biodiversity, it must be noted that this framework is typically implemented through Namibia's well-functioning partnership approach involving government, NGOs, donor organisations and the private sector.

The specific focus on priority biodiversity areas for Namibia by projects such as NACOMA, SPAN and ICEMA is testament to the role of the NBSAP in formulating donor funded support interventions. The NACOMA project is facilitating the establishment of ICZM in Namibia and has pushed biodiversity to the top of the development agenda in the coastal regions. The SPAN project is playing a key role in improving the representation of the different biomes and biodiversity hotspots covered by the protected area network, as well as improving the management effectiveness of state protected areas, while the ICEMA project has introduced the "Ecosystem Approach" to 16 target conservancies with great success. The ICEMA project and wider CBNRM programme is a good example of how a system based on incentives for conservation and the sustainable use can lead to the fair and equitable sharing of benefits to communities. These projects have thus continued greatly to the achievement of NBSAP and the wider global 2010 targets, while other projects such as the CPP are taking Namibia to the next level by integrating different elements of the UN Conventions on desertification, climate change and biodiversity.

NBSAP Strategic Objective X: Implementation of the Strategy and Action Plan

Outcome 10.1:
Strong, dedicated NBSAP implementation unit established with full staffing and adequate resourcing in a strategic position

Progress

- MET's strategic plan 2007/8-2011/12 is well aligned with the NBSAP
- Other ministries such as the MAWF and MFMR have integrated elements of the NBSAP into their planning processes

Achievement of Specific Targets

- Detailed implementation plan for the implementation unit developed by 2002 ✗
- Core staff and operating budget for core activities secured by 2003 ✗
- Unit fully staffed and functional by 2003 ✗
- Detailed briefing given to MET's technical committee by 2002 ✗
- NBSAP activities fully integrated into detailed ministry planning ✓
- Workplan and terms of reference for implementation unit agreed by parties by 2002 ✗

Challenges

- NBSAP was never formally endorsed by MET or cabinet, which limited its effectiveness and influence over other sectors
- Funds not allocated by MET towards the operationalisation of the NBSAP implementation unit

Outcome 10.2:
Existing capacity of the National Biodiversity Taskforce and National Biodiversity Programme Coordination Unit strengthened

Progress

- Good cooperation between the Conventions division within the DEA and national programme heads
- A number of implementation partner organisations were identified and have supported greatly the achievement of NBSAP objectives

Achievement of Specific Targets

- Trainee working groups support officer and two other professionals appointed on performance contracts by 2002 with salaries assimilated into MET's budget ✗
- Implementation partner organisations identified and appointed through transparent procedures with performance contracts and budgets ✓
- All working groups submit delivery plans for clear outputs by NBSAP timetables, and enforcing monitoring and evaluation mechanisms agreed by 2002 ➲
- Conventions division of the Directorate of Environmental Affairs (MET) and national programme heads develop common timeframes for joint activities and identify obstacles ✓

Challenges

- Proper support was not provided to the working groups after the termination of the NBP and external funding
- Working groups were generally not integrated into the NBSAP particularly after the end of the NBP

Outcome 10.3:
Streamlining of biodiversity issues into national development planning and budgeting processes

Progress

- NBSAP objectives and targets are closely aligned to Namibia's NDP3 and the MDGs targets (see more detail in Chapter III)
- State budget allocation towards biodiversity conservation has increased greatly (see more detail in Chapter III)

Achievement of Specific Targets

- NBSAP activities integrated in national planning processes with selected components reflected in the national budget ✓
- Budgetary provisions for NBSAP implementation activities supported by Ministry of Finance and members of parliament ➲
- 75% of the annual requirements for the implementation of the NBSAP met through the national budget ✗

Challenges

- Majority of NBSAP activities funded by external donors
- Insufficient government investment in biodiversity conservation

Outcome 10.4:
Detailed financial implementation developed for the NBSAP

Progress

- NBSAP document played a key role in Namibia's success in attracting GEF-funded projects
- Other projects emanating from bilateral cooperation such as the German Development Bank (KfW) Bwabwata, Mudumu and Mamili National Parks Project and the German Development Sevice (DED) Community Forestry in North-Eastern Namibia have built on biodiversity-related needs identified and prioritized through the NBSAP

Achievement of Specific Targets

- Discuss financing gaps with the EIF board ✗
- Proactively seek financing from government, multilateral, bilateral and private sources, including government-donor round tables ✓
- Revisions of financial requirements annually from 2004 and at time of the government's budgeting processes ✗

Challenges

- EIF never became operational during the lifespan of the NBSAP
- NBSAP was never formally budgeted for by the government

2.5 Contributions of National Actions to Implementation of the CBD Thematic Areas and Cross-Cutting Issues

Thematic Programmes of work/cross-cutting issue	Namibian contributions since NR3 (2005)
Thematic Programmes of Work	
Agricultural Biodiversity	There has much recent research into indigenous crop diversity, and the development of new crop breeds. Wild species collection has also focused on useful species or species of conservation concern. UNAM and the MAWF are the main actors in this area and they have combined to establish a gene bank, biotechnology and tissue culture laboratories, as well as plant breeding and seed technology facilities at the Ogongo campus in Northern Namibia. A new project is also underway through the NBRI to document farmers' crop conservation practices in the Oshana region.
Dry and Sub-humid Lands Biodiversity	Namibia is taking the lead in tackling land degradation in Southern Africa and has recognized the key role of healthy biodiversity and ecosystems to this process. It hosted a Southern African conference on the practicalities of sustainable land management in dryland regions. A number of innovative best practice lessons were shared at that conference and are being implemented in Namibia (see case studies 10 and 11 as examples).

Forest Biodiversity	Namibia's community forest programme is a good example of how to apply the ecosystem approach to forest management. Communities are involved in compiling forest inventories as a basis for the sustainable harvesting and use of forest and rangeland products. Integrated fire management plans are being developed for community forests and protected areas, which serve as proactive approaches to fire management and biodiversity conservation.
Inland Waters Biodiversity	The conservation and sustainable use of inland water biodiversity is being best addressed in Namibia through transboundary initiatives and the integrated water resources management approach. OKACOM and ORASECOM are now receiving considerable support and are implementing a coherent approach to managing the Okavango and Orange rivers based on equitable allocation, sustainable utilization, sound environmental management and sharing of benefits. A similar approach is underway for Namibia's ephemeral rivers with basin management committees now in place for three river basins.
Island Biodiversity	Namibia's first MPA proclaimed in 2009 has placed all of the country's islands under conservation protection. These provide important breeding habitats and roosting grounds for 11 of Namibia's 14 breeding seabird species. Of these species, 9 are endemic to the Southern African region. The rocky areas around the islands typically provide rich inter-tidal zones and crucial substrates for kelp beds and various benthic species including the commercially important west-coast rock lobster (*Jasus islandii*). Thus Namibia's first MPA is set to make a major contribution to the conservation of island biodiversity.
Marine and Coastal Biodiversity	The process of establishing ICZM is at an advaced stage. An ICZM committee is already in place and the coastal zone management policy (white paper stage as of 2010) is paving the way to formally establish ICZM in Namibia. An ecosystem approach to fisheries management is also being pursued by MFMR with support from the BCLME Strategic Action Plan for Restoring Depleted Fisheries and Reducing Costal Resources Degradation
Mountain Biodiversity	Many mountain ecosystems in Namibia are home to high species richness and a high number of endemic and endangered species in Namibia. A ranking of mountain ranges in terms of biodiversity richness and endemism has been carried out and key mountain ecosystems such as the Brandberg are now under conservation management of communal conservancies. However a more systematic approach is necessary in this area
Cross-cutting issues	
2010 Biodiversity Target	Namibia has made great progress towards the 2010 target of reducing biodiversity loss. The protected area network has expanded to cover comprehensively its two global "biodiversity hotspots". Its entire coastal zone, home to many endemic species, is now also under the highest form of conservation management. Collaborative management approaches have also been initiated in a number of conservation areas to improve wildlife connectivity. Rights over wildlife and other natural resources have also been

	devolved to communities, which are promoting the sustainable use of these resources based on participatory monitoring activities. The results of this approach on wildlife numbers has been profound, and rising numbers of large mammals, including rare and threatened species, is the trend in Namibia. Threats to biodiversity are also being addressed mainly thorugh the development of appropriate policy and legislation, but also in increased investment and real efforts to mainsteam the importance of biodiversity conservation and sustainable development across sectors.
Access to Genetic Resources and Benefit-sharing	A draft Access to Genetic Resources and Traditional Knowledge Bill has been formulated but put on hold until the negotiations of the International Regime on Access and Benefit-Sharing at COP 10 to the UNCBD. In the meantime, a functioning Interim Bioprospecting Committee (IBPC) was set up in 2007 until the bill is finalized. The IBPC played an important role in the negotiation of Namibia's first ABS-agreement, which was signed in April 2010 for commiphora resin.
Biodiversity for Development	Namibia's policy framework has provided an excellent enabling environment for aligning poverty alleviation with biodiversity conservation and environmental sustainability. Communities have control and responsibility over their own resources, which they are using sustainably for their own development. Biodiversity-compatible land uses such as private reserves and wildlife management are emerging as viable development options.
Climate Change and Biodiversity	Namibia is one of the most vulnerable countries worldwide to climate change given its already highly variable and harsh climate, and the reliance of a high percentage of the population on the natural resource base. A number of studies have been conducted as to how Namibia and its biodiversity are likely to be affected by climate change, including a recent one on how species will be affected in terms of distribution, composition and migration.
Communication, Education and Public Awareness	The raising of public awareness on biodiversity has been particularly strong in Namibia during the IYB 2010. A wide variety of events were coordinated by a special IYB steering committee comprising of the MET's Environmental Education and Information Services and a range of other key stakeholders. Examples of events include a biodiversity action day at the Brandberg (biodiversity-rich mountain ecosystem), a national youth biodiversity symposium and an information day for parliamentarians on biodiversity. Efforts are also underway to formulate an environmental education policy, which will formally mainstream elements of biodiversity into the national curriculum.
Economics, Trade and Incentive Measures	Namibia has followed an approach of devolving rights over its resources to local communities as a means of generating incentives for them to wisely manage those resources. Examples of this are evident in the areas of wildlife, forest products, water resources and tourism facilities. Enabling policies are being implemented with excellent results for communities and the environment at large.
Ecosystem Approach	The ecosystem approach has been well mainstreamed into Namibia's development process. It is most evident in Namibia's rapidly expanding CBNRM programme and in the fisheries sector. Forests, rangelands, wildlife and water are increasingly being managed by communities in an

	integrated and sustainable manner. Sustainable use is based on innovative and participatory resource monitoring methods. A similar approach where sound management is being based on improved understanding and awareness of interactions between the various physical, chemical and biological components of the Benguela current ecosystem.
Global Strategy for Plant Conservation	Namibia is contributing towards the Global Strategy for Plant Conservation, albeit at a slower rate than intended. Seeds from approximately 7% of total plant species have been collected and the SADC PGRFA network and the MSBP(2001-2009) have combined well to address ex-situ conservation needs. Nevertheless financial and human resource constraints are considerable in this area. In-situ conservation has been boosted by positive developments in the coverage of the protected area network, most notably the proclamation of the Sperrgebiet National Park in the Succulent Karoo ecosystem. Management plans for alien invasive species and stricter controls on the pachycaul trade are urgent requirements.
Global Taxonomy Initiative	Promising progress was made in the early years of the NBSAP in addressing the "taxonomy impediment". Much information was computerized and made available to the public through the website www.biodiversity.org.na. A biosystematics capacity needs assessment was also carried out, however it has not been properly implemented. Financial and human resources remain great impediments in this area for Namibia.
Impact Assessment	The promulgation of the Environmental Management Act of 2007 provides the legal basis for the assessment and control of activities across all sectors which may have harmful effects on the environment, including land use planning, resource extraction and mining, water abstraction, infrastructure and industrial development, tourism, agricultural processes and waste disposal amongst others. Environmental Impact Assessments and Strategic Environmental Assessments are the main tools to achieve this. A number of SEAs have been carried out in Namibia (four for the coastal regions and others on biofuels in the north-east regions and uranium mining in the Erongo region are at an advanced stage). EIAs are handled by the EIA Unit within the MET.
Identification, Monitoring, Indicators and Assessments	Identification work is ongoing but is challenged by inadequate human and financial resources. The SADC PGRC network and the Millennium Seed Bank Project (2001-2009) have given good impetus to ex-situ collection of plants in Namibia. However the sustainability of collecting and monitoring are major challenges, particularly in the absence of donor support. Activities undertaken in relation to the monitoring of biodiversity threats and indicators are outlined in greater detail in section 2.2.3. Good progress has been made in involving local communities in the resource monitoring process particularly through communal conservancies and community forests, but also outside of protected areas through the network of BIOTA observatories and local level monitoring techniques. The continuation of the monitoring instigated through the BIOTA project is a major challenge given the termination of the project in 2010.

	Efforts are underway to operationalise a national land degradation monitoring system. However integrating the system into one centralised system is a challenging process that is likely to be a long term endeavour.
Invasive Alien Species	Namibia's most threatening alien invasive plant and animal species have been identified. However progress is lacking in terms of countering these threats. Adequate legislation and management plans are not in place for these species, and the need for improved capacity and awareness raising have been identified.
Liability and Redress - Art. 14(2)	There has been relatively little progress in terms of this article Namibia. However mining companies have shown encouraging commitment to restoring areas that have been degraded, and in some cases have conducted this work prior to the start of mining activities. The concept of biodiversity offsets has also been introduced to Namibia with a preliminary workshop on the issue held in Windhoek in 2010.
Protected Areas	Recent expansion of the protected area network has shored up Namibia's global biodiversity hotspot Succulent Karoo and Great Western escarpment areas. The entire coastal zone is now under national park protection status. Collaborative management practices have been initiated as part of methods to improve connectivity between different conservation management approaches.. Management effectiveness assessments have been introduced and are showing positive trends. Infrastructural investment is increasing into protected areas and sustainable financing mechanisms are being developed.
Sustainable Use of Biodiversity	Consideration of the conservation and sustainable use of biological resources has been well integrated into Namibia's development and national decision making. The promulgation of the Environmental Management Act (2007) has laid the legal basis for mandatory environmental impact assessments for new developments. A Concessions policy and the establishment of a dedicated Concessions Unit within the MET has aided the development of eco-tourism and community partnerships with the private sector through joint venture agreements. Sustainable use of natural resources is being facilitated by multi-stakeholder bodies such as the IPTT
Technology Transfer and Cooperation	Technology transfer and cooperation has continued on an ad hoc basis in Namibia. Cooperation with international institutions and programmes of assistance such as the MSBP are the main mechanisms for this. Substantial investment is also needed to enable more systematic research of Namibia's wildlife and protected areas.
Tourism and Biodiversity	Namibia's growing tourism industry is inextricably linked to its biodiversity. Tourists are mainly attracted to Namibia by its pristine open spaces, remarkable diversity of landscapes and its great wildlife viewing opportunities. Namibia has made great strides to ensure that its tourism remains high quality and low impact. The tourism concessions policy (2007) has promoted this, and eco-tourism initiatives are increasingly being promoted in private reserves, state-protected areas and communal conservancies.
Traditional Knowledge, Innovations and Practices	Access to traditional knowledge is being regulated through the Interim

	Bioprospecting Committee, which was established in 2007. Traditional knowledge practices are being built on and used as a basis for value addition and are being mainstreamed into wider management practices.

Chapter III: Mainstreaming Biodiversity

3.1 Introduction

The mainstreaming of biodiversity is the incorporation of biodiversity conservation and environmental considerations into the social, physical, and economic development of the country to achieve sustainable development. Rich biodiversity is critical to sustainable development because biodiversity provides the goods, services and habitats that maintain livelihoods, which foster economic development. Biodiversity conservation and mainstreaming can be achieved through environmentally conscious planning, decision-making, and policy formulation, even in sectors where the environment is not the primary concern. Successful mainstreaming of biodiversity comes through cross-sectoral and public private partnerships, along with good scientific information and understanding, as well as strong institutional capacity and commitment.

The MET has been driving the mainstreaming of biodiversity into other sectors and programmes since the foundation of the National Biodiversity Programme in 1994. Biodiversity conservation is recognized as a key tenet of sustainable development and it is well integrated into Namibia's long term development framework, which comprises of Vision 2030 and a series of 5 year National Development Plans (NDPs). While mainstreaming of biodiversity has taken place to a large extent, Namibia still experiences challenges with regard to the finalization and implementation of policies. The importance of biodiversity conservation is also not fully recognized by other sectors. This chapter seeks to identify Namibia's success and challenges in mainstreaming biodiversity.

3.2 Integration of Biodiversity into Cross-Cutting Strategies and Relevant Sectors

Namibia is unique among nations, in that the country has a strong foundation of environmental management and biodiversity conservation. Often these initiatives take a cross-sectoral approach. This section will first look at the over arching policies within Namibia that set the foundation for a multi-sectoral approach to biodiversity conservation. Then the section will list sectors involved in biodiversity conservation, and each sector's responsibility and contributions to environmental management.

3.2.1 Overarching Guiding Policies

Constitution of Namibia

Namibia's foundation for environmental stewardship is first and foremost set in the Constitution. The Constitution emphasizes the need for policies that maintain ecosystems, ecosystem processes and biological diversity for the benefit of current and future generations. This foundation stipulates that all policies and legislation in Namibia must be in line with the environmental mandates of the Constitution. Specifically, the Constitution seeks to protect the:

- Over-utilisation of living and natural resources
- Irrational exploitation of non-renewable resources
- Degradation and destruction of ecosystems
- Failure to protect the beauty and character of Namibia
- Failure to take the appropriate action to call for the remediation, correction and reversal of activities related to the above through mains that are fair, proper, and effective

Vision 2030

Namibia's Vision 2030 serves as the long-term development framework for the country to be a prosperous and industrialized nation by 2030, developed by her human resources, enjoying peace, harmony and political stability. Its vision for the natural resources sector states that Namibia shall develop its natural capital for the benefit of its social, economic and ecological well-being, by adopting strategies that promote the sustainable, equitable and efficient use of natural resources, maximizing comparative advantages and reducing inappropriate resource use practices.

National Development Plan III (NDP3) and the Millennium Development Goals (MDGs)

It is envisaged that Vision 2030 will be realized incrementally through a series of five year national development plans (NDPs). The main thrust of the current NDP3 (2007/8-2011/12) is to accelerate economic growth while deepening rural development. NDP3 is comprised of eight key result areas (KRAs), one of which is the productive utilization of natural resources and sustainable development. This KRA aims to ensure the development of Namibia's natural capital and its sustainable utilization for the benefit of the country's social, economic and ecological well being. This objective is directly aligned to Millennium Development Goal 7 of ensuring environmental sustainability. The NDP3 recognizes that this aim cuts across sectors, and outlines the ways in which the different sectors should contribute. Similarly environmental sustainability is important to the attainment of all of the MDGs. The links between the environment in Namibia and the different KRAs of NDP3 and the 8 MDGs are presented in the table below.

KRA and Associated Goals	MDGs	Selected key issues relevant to environmental mainstreaming
KRA1 – Equality and Social Welfare • *Reduce inequality in social welfare* • *A society imbued with culture, tradition and morality* • *Gender equality*	Promote gender equality and empower women – **MDG3**	▪ Improved land and NR tenure enhances women's economic empowerment and livelihoods ▪ Greater involvement of women in the management of CBNRM initiatives such as the Conservancies enhances gender equality and empowerment.
KRA2 – Peace and Political Stability • *Enhanced and sustained participatory democracy* • *Strengthened rule of law and social justice* • *Territorial integrity*	**MDG1 – MDG7**	▪ Participatory policy and law making in environment and natural resources enhances democracy and fosters stability. ▪ Adequate enforcement of environment and natural resources policies and laws averts plunder of natural resources, enabling seizure of opportunities to generate revenue from NRs and minimizes the risks of extreme weather events associated with environmental degradation. ▪ Effective transboundary management of shared water resources, migratory wildlife, and marine resources prevents potential conflict.
KRA3 – Productive and Competitive HR and Institutions • *Adequate supply of qualified, productive and competitive labour force*	Eradicate extreme poverty and hunger – **MDG1** Achieve universal primary Education – **MDG2**	▪ Improved technical and managerial capacity for sustainable utilisation of natural resources enhances resource productivity and benefits economic growth. ▪ Earlier socialisation on environmental sustainability through formal and informal education and training on sustainable development issues have medium and long-term benefits for both the environment and development. ▪ Enhanced entrepreneurial skills for value addition to NTFPs and other economic empowerment and sustainable use of those resources. ▪ Devolution of resource management rights and responsibilities helps establish community-based institutions which are critical to local level empowerment and capacity strengthening.

KRA4A – Macroeconomy Goals • *Equality in income distribution* • *Increased and sustainable economic growth* • *Increased employment* • *Increased smart partnerships* *KRA4B – Infrastructure* • *Highly developed and reliable infrastructure*	Eradicate extreme poverty & hunger – **MDG1** Ensure environmental sustainability	▪ Equitable access to land, water and other productive resources promotes equality of opportunity for development. ▪ Sustainable land management, better water governance, sustainable fisheries, sustainable tourism and enhanced capacity to adapt to extreme weather events associated with global warming are good for economic growth and poverty reduction. ▪ Infrastructure development that is environmentally sensitive averts negative consequences for the population, promotes provision of sustainable hydropower, enables effective management of protected areas for tourism, and improves markets access for the poor, especially those dependent on the market for dryland products.
KRA5 – Quality of life • *Affordable and quality healthcare* • *Reduced spread of HIV/AIDS & mitigation of its effects* • *Eradication of extreme poverty and hunger*	Eradicate extreme poverty and hunger – **MDG1** Combat HIV/AIDS, malaria and other diseases – **MDG6** Improved maternal health – **MDG5**	▪ Livelihood strategies and food security of the poor and the medium-term economic growth prospects of a natural resource-based economy are often dependent directly on healthy ecosystems and the diversity of goods and ecological services that they provide. ▪ Improved access to water and sanitation reduces health risks and morbidity, undermining labour productivity. Attendant reduced drudgery on women minimizes risks of complications during pregnancy. ▪ Averting land degradation and loss of biodiversity that are unique to drylands: (a) Ensures sustainable land productivity on which the economic empowerment and food security of the poor depend. (b) Enables possible development of pharmaceutical products and new crop varieties. ▪ Attention to HIV/AIDS helps households to deal with problems of reduced human resources and financial capacity to invest into sustainable land management, as well as impact on labour force.
KRA 6A – Sustainable Utilisation of Natural Resources • *Optimal and sustainable utilisation of renewable and non-renewable resources* *KRA 6B – Environmental sustainability* • *Environmental Sustainability*	Eradicate extreme poverty and hunger – **MDG1** Achieve universal primary education – **MDG2** Promote gender equality and empower women – **MDG3** Improved maternal health –**MDG5** Environmental sustainability – **MDG7**	▪ Ensuring healthy and productive ecosystems promotes economic growth, enhances food security, minimizes natural hazards that are usually associated with degraded ecosystems and avoids future costs of restoration. ▪ Seeking and establishing markets for ecosystem services enables generation of additional revenue for investment in resource management and livelihoods of the poor. ▪ Adding value to non-renewable resources such as minerals and averting negative environmental consequences of extraction benefits economic growth, human health and ecological integrity. ▪ Improved access to water and clean energy services releases women's labour time for productive work, enables full attendance of the female child at school, and reduces morbidity associated with indoor air pollution.
KRA7 – Knowledge based & Technology Driven Nation • *Innovative and productive usage of information and communication technology*	Eradicate extreme poverty and hunger – **MDG1** Combat HIV/AIDS, malaria and other diseases – **MDG6**	▪ GIS and Remote Sensing application at national and decentralised levels enhances poverty-environment mapping and enables knowledge-based environmental decision making. ▪ Strengthening institutional capacity at national and decentralised levels for application of decision tools such as Strategic Environmental Assessment (SEA), Environmental Impact Assessment (EIA), Environmental Resource Accounting (EA) contributes to fostering a culture of knowledge-based policy-making and planning. ▪ Strengthening capacity for sourcing and provision of satellite-radio based (RADNET) weather information enhances the adaptive capacity to the vagaries associated with climate variability.
KRA8 – Regional & International Stability & Integration • *Promote regional integration* • *Strengthened partnerships for*	Develop a global partnership for development – **MDG8**	▪ Enhanced capacity for policy-making, planning and resolution of conflicts associated with sharing and management of transboundary resources is beneficial for poverty reduction, peace-building and environmental sustainability. ▪ Strengthening capacity for effective negotiations on MEAs, especially that pertaining to trade and environment, benefits poverty

development • *Contribution to regional and global peace and political stability*		reduction and environmental sustainability.

Table 13: ***Linkages between the environment and the KRAs of NDP3 and the 8 MDGs*** **(Source: Zeidler 2007)**

NDP3 also lays out a number of targets, which are monitored and evaluated at a mid-term interval and at the end of each 5 year cycle. The targets relating to KRA6 are closely aligned with those of the NBSAP and include indicators such as the area covered by conservancies, number of protected areas managed according to approved management plans and the percentage of targeted key wildlife species whose populations are stable or increasing. The mid-term evaluation of NDP3 is currently underway and the preliminary results show that Namibia is on track to meet many of its environment-related NDP3 goals by 2012.

3.2.2 Sectoral policies developed by line ministries relevant to biodiversity

Socio-economic development in Namibia is constrained by the country's natural aridity, combined with the high reliance of the majority of the population on natural resources and the growing pressure on these resources as the population grows rapidly. These constraints are compounded by the legacy of settler colonialism and apartheid which have both left an indelible mark on the country with the majority of the population neglected in terms of access to housing, sanitation, health, education and productive land. This combination of factors prompted the post-independence government to formulate a series of policies, legislation and strategies that aim to lead Namibia on a path towards a more sustainable and equitable development. This is an ongoing process and the importance of a healthy and functioning environment is increasingly being recognised by most of these policies. For the sake of continuity only policies developed during the lifespan of the NBSAP are considered in this section.

3.2.2.1 Ministry of Environment and Tourism

As custodian of Namibia's natural environment, the MET seeks to be a role model in the conservation and use of biodiversity, the promotion of natural resource-based livelihoods, environmental management and tourism development through innovation and partnerships in order to contribute to rural development and economic growth. Environmental sustainability is a key element of sustainable development and the MET plays a lead role in setting relevant policies and in advocacy work, promoting environmental sustainability concerns among other sectors (MET 2007). Examples of policies and legislations that impact on other sectors and biodiversity, and that have been developed or are being developed mainly through the MET are included below:

Environmental Investment Fund Act

This act was promulgated in 2001, and was intended to pave the way for the operationalization of Namibia's Environmental Investment Fund. However complications over capitalization arose and the fund has only become active in 2010. The fund intends to provide support to community-based environmental projects.

Draft Wetland Policy (2005)

A wetlands policy, drafted in 2005, aiming at the integration of sustainable wetland management, protection and conservation into decision-making at all levels has yet to be submitted to parliament for approval.

Environmental Management Act (2007)

This landmark Act provides the foundation for the wise management of the country's fragile environment and the sustainable use of its natural resources. It also provides the legal basis for the assessment and control of activities across all sectors which may have harmful effects on the environment, including land use planning, resource extraction and mining, water abstraction, infrastructure and industrial development, tourism, agricultural processes and waste disposal amongst others. In this way the Act impacts upon all sectors of society and the MET has done much to raise awareness among other sectors and the public at large about the importance of this Act to sustainable development in Namibia.

Tourism Concessions Policy (2007)
This policy is discussed in more detail in section 2.3.4. It is having an important impact on biodiversity by promoting eco-tourism activities with the involvement of local communities. These high value low impact activities are benefiting both biodiversity and rural communities.

Protected Area and Wildlife Management Bill (2010)
This long overdue legislation has been in draft form for many years. When promulgated, it will provide a regulatory framework for the protection, conservation and rehabilitation of species and ecosystems, the sustainable use and sustainable management of indigenous biological resources, and the management of protected areas so as to conserve biodiversity and contribute to national development. It will also repeal the Nature Conservation Ordinance 4 of 1975.

National Policy on Human Wildlife Conflict Management (2009)
This policy provides a framework and guidelines for management of HWC in a way that recognizes the rights and development needs of local communities as well as the need to promote biodiversity conservation. It also promotes self-reliance and ensures that decision-making is quick, efficient and based on the best available information.

Draft National Climate Change Policy (2009)
A draft climate change policy was set in motion in 2009 with the following objectives:

- Address root causes of vulnerability, especially at regional and local levels where rural people and commercial enterprises (e.g. livestock and crop farming) are predicted to suffer the most from climate change impacts;
- Protect essential ecosystems, creating conservation areas with high levels of biodiversity;
- Enhance environmental planning and coordination procedures within government;
- Strengthen capacities at all levels (individual, institutional and systemic) for climate change monitoring and assessment, integrated planning and decision making;
- Generate awareness, educate people and improve access to information about climate change and potential impacts for Namibia.

This policy is also a key measure for attracting investment in sustainable development projects and the development of renewable energy projects in Namibia.

Coastal Zone Management White Paper (2010)
The development of this policy represents a major achievement in putting biodiversity high on the agenda in the management of Namibia's sensitive and biodiversity-rich coastal zone. This is discussed in more detail in section 2.2.3.6.

Draft National Policy on Mining and Prospecting in Protected Areas (2009)
This policy development is still in its early stages but is evidence of the danger that mining-related activities are posing to biodiversity in protected areas. The purpose of this policy is to promote Namibia's sustainable development by guiding prospecting and mining in the country's sensitive protected areas.

Draft National Policy on Protected Areas, Neighbours and Resident Communities (2009)
It is one of the MET's objectives that protected areas serve as "economic engines" for growth in the surrounding areas. This policy aims to improve the conservation of Namibia's protected areas, to provide greater social equity in the distribution of benefits from protected areas and to stimulate local and regional economies. It gives particular attention to promoting the socio-economic development of these communities and their involvement in the planning and development of protected areas.

Draft National Environmental Education Policy
This policy existed as far back as 1999, but the MET has taken positive steps to update and refine it during 2009 and 2010. The MET and Ministry of Education are taking the lead in this, with support from other partners including the CEGEM project, through the establishment of the Namibia Environmental Education Network. This is an important step in mainstreaming environmental education in Namibia's national curriculum.

3.2.2.2 Ministry of Agriculture, Water and Forestry (MAWF)
The MAWF is inherently involved in biodiversity conservation due to its goal of promoting sustainable development through the use of agriculture, water and forestry.

National Forest Act and Policy (2001)
This Act and Policy and their effects are described in detail in section 2.2.3.4. Their main aims are to protect and make Namibia's forests productive for the economic welfare of rural communities. They also lay down guidelines as to how forest resources may be used and the responsibilities of the users.

National Water Resources Management Act (2004)
This Act is described in more detail in sections 2.2.3.2 and 2.2.3.5. It has laid the basis for devolving rights and responsibilities over water management to communities and basin management committees. It is aimed at improving the management, development, protection, conservation, and use of water resources.

Draft National Seed Policy (2005)
Among the aims of this policy are to increase seed accessibility in general, as well as the availability of improved seed varieties, particularly drought tolerant and early maturing varieties, as well as the safe-guarding of genetic purity and variation in crops.

Green Scheme Policy (2004 and revised 2008)
The Green Scheme aims to encourage the development of irrigation based agronomic production in Namibia to increase the contribution of agriculture to the country's Gross Domestic Product and to simultaneously achieve the social development and upliftment of communities located within suitable irrigation areas. It is being undertaken along the country's northern perennial rivers. There is concern as to whether this scheme offers optimum potential in terms of resource use (mostly low value crops such as maize and wheat that are grown) and economic returns. Biodiversity is also threatened by land clearing and pollution from fertilizers and pesticides.

Water Supply and Sanitation Sector Policy (2008)
This policy identifies the following elements as part of its long-term policy to improve the supply of water and sanitation services:

- Communities should have the right, with due regard for environmental needs and the resources and information available, to determine which water and sanitation solutions and service levels are acceptable to them within the boundaries of the national guidelines; and
- Environmentally sustainable development and efficient utilization of the water resources of the country and environmentally sustainable development of sanitation services should be pursued in addressing various needs, and should be strongly supported by information campaigns and continuous educational interventions at all levels.

3.2.2.3 Ministry of Fisheries and Marine Resources (MFMR)
Biodiversity issues have been very well mainstreamed into the responsibilities of the MFMR. Some recent pertinent legislation is outlined below:

Aquaculture Act (2002)
The Aquaculture Act regulates and controls aquaculture activities and the sustainable development of aquaculture resources. It allows the Minister to "formulate policy based on social, economic and environmental factors, the best scientific information and advice… to promote sustainable aquaculture and manage, protect and conserve aquatic ecosystems". Environmental Impact Assessments are also required prior to the designation of an Aquaculture Development Zone. A licence may be withheld if the enterprise poses a significant risk of pollution or otherwise adversely affects the environment. A licence may be suspended or cancelled to ensure protection and conservation of the environment. The Act also includes strong measures against the import and transfer of alien species and genetically modified organisms.

Inland Fisheries Act (2003)
This Act deals with the conservation and utilisation of inland fisheries resources. It prohibits the introduction, transfer, import and export of any species of fish or crustacean without written permission.

3.2.2.4 Ministry of Health and Social Services
The Atomic Energy and Radiation Protection Act (2005)
This Act is concerned with the health and safety of workers, public and the protection of the environment from the harmful effects associated with radiation. It lays the basis for the development and implementation of a regulatory regime and the management of radioactive waste.

3.2.2.4 Ministry of Lands and Resettlement
The Communal Land Reform Act 2002
This act is described in greater detail in section 2.2.6 and has important implications for sustainable land management, biodiversity conservation and sustainable development in Namibia's communal regions. There has been good cooperation between MET and MLR to ensure that environmental factors are taken into account by the newly mandated Communal Land Boards in decision-making.

3.2.2.5 Ministry of Mines and Energy

While no new pertinent legislation has been promulgated through the MME in recent times, it has coordinated a voluntary pilot SEA on the uranium mining industry in the Erongo region. EIAs for new mining sites are adding to our knowledge of biodiversity. The MME also set up the Namibian Renewable Energy Programme (NAMREP) to promote renewable energy initiatives in 2003, with support from the GEF. The MME has also been involved in renewable energy projects, research activities and awareness campaigns through the multi-stakeholder Renewable Energy Efficiency Institute (REEI).). A 2007 cabinet directive has also made solar water heating systems mandatory for all public and semi-public buildings.

3.2.2.6 National Planning Commission

The NPC is tasked to identify priorities and chart the course of national development through the orientation, design and surveillance of economic social plans and policies. The NPC designs and coordinates Namibia's NDPs and is also involved with developing regional poverty profiles and is home to the EU Rural Poverty Reduction Programme.

National Poverty Reduction Action Programme (NPRAP 2002)

Namibia's NPRAP was designed to implement and elaborate on Namibia's Poverty Reduction Strategy of 1998 during the period 2001-2005. A review of the NPRAP completed in 2005, indicates that appropriate environmental related strategies were not sufficiently included in the NPRAP. The report found that areas of particular concern were sectors related to the management of sustainable natural resources and the involvement of environmental professionals in the formulation, implementation and monitoring of its strategies and actions (NPC 2005). Biodiversity needs to be a critical component any poverty reduction strategy for Namibia especially given the dependence of a high percentage of the population on the resource base.

3.2.3 Budget Allocation towards Biodiversity Conservation-related Activities

In addition to assessing recently developed policy and legislative frameworks, trends in government budgetary allocations towards biodiversity-related activites offer an indication as to how seriously biodiversity is being prioritized in Namibia. Recent research by the Environmental Economics Unit within the MET used planned expenditure data from certain directorates within the MET, MAWF and MFMR to approximate maximum government spending on biodiversity since 1990.

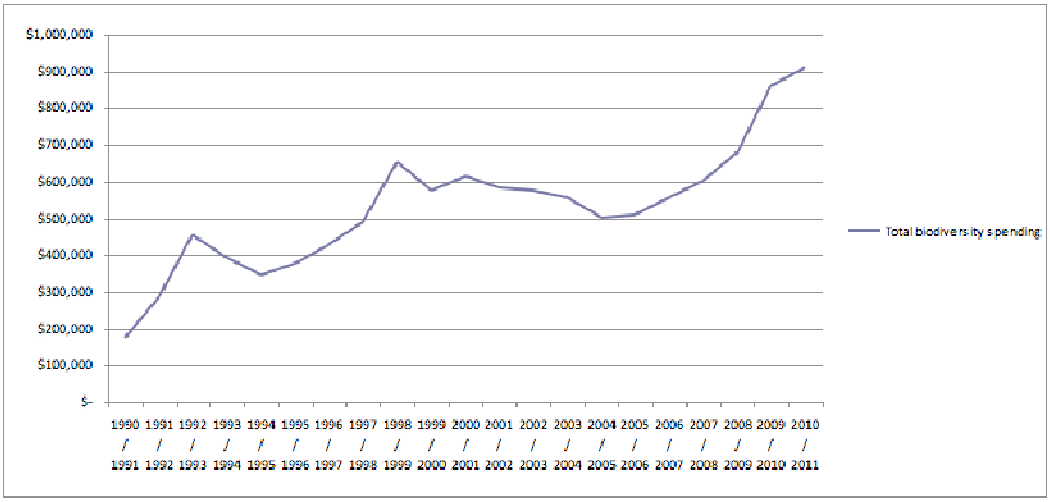


Fig 18: ***Maximum total government spending on biodiversity (N$ 000s, 2010 prices) (Calculated from Ministry of Finance budget records)***

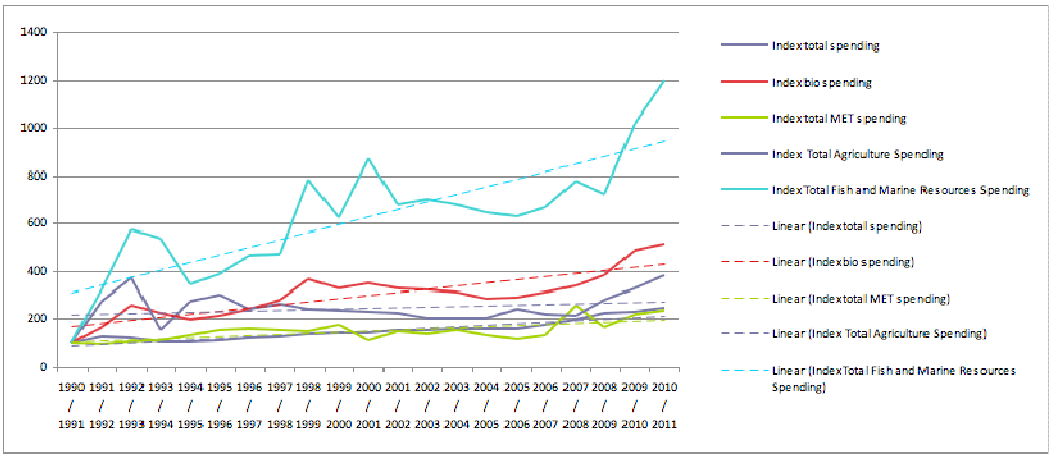


Fig 19: ***Index of relevant ministry planned expenditure over time using 1990/1 as a base year*** **(Calculated from Ministry of Finance budget records).**

It is possible to deduce tentatively from the figures above that government investment in biodiversity is increasing. The data is based on the total expenditures of the Directorates of Parks and Wildlife and Scientific Services at the MET, Forestry, Research and Resource Management at MAWF and Resource Management and Operation and Surveillance at MFMR, which are the main directorates involved in biodiversity conservation in Namibia. While government investment in biodiversity appears to be increasing, it should be noted that this investment currently only accounts for approximately 3% of total government expenditure.

Figure 19 gives a good quantitative summary as to the investment government is putting into the fisheries sector. The MFMR has invested heavily since the mid 1990s on research and the development for a more effective management capacity. These investments in areas such as monitoring, control and

sureveillanse as well research and training represent a good example of long term government commitment to biodiversity conservation of marine resources. While expenditures on parks and wildlife management and forestry research and management also show upward trends, this needs to be substantially increased given Namibia's expanding protected area network and CBNRM programme.

3.2.4 Challenges to Mainstreaming Biodiversity

From the list of policies and legislation quoted above, it is clear that environmental sustainability, and by extension biodiversity, are quite well considered in the formulation of policies by different sectors. However it is difficult to measure the extent to which this is realized in the on-the-ground translation of these policies into action. In general thorough implementation of Namibia's excellent policy framework is lacking owing to shortages in human and financial resources, as well as the lack of a properly functioning decentralized system. Each different region in Namibia faces very different threats to their environments to which flexible approaches and responses are required. The empowerment of environmentally knowledgeable regional councils with support from MET regional offices would be the ideal solution to this scenario. However attempts to instigate such an approach at the coast through the NACOMA project show serious capacity constraints at both levels as well as the need for concerted funding and empowering legislation.

The finalization of policies remains a key obstacle to mainstreaming biodiversity. The number of MET policies and legislation in draft form is an indication of this problem. Examples include the Pollution and Waste Management Bill (in draft form since 1999) and the Protected Areas and Wildlife Management Bill, which has also been in draft form for many years. These pieces of legislation have very important roles to play in biodiversity conservation, and in mitigating some of the threats to biodiversity outlined in section 1.4. Namibia is in clear need of a framework to manage waste and pollution given the largely uncontrolled expansion of urban areas, dumping of rubbish in the coastal areas (as outlined in coastal EMPs) and the large-scale intensive farming practices being promoted along Namibia's perennial rivers among others. The Protected Areas and Wildlife Management Bill has a major responsibility to address the issue of alien invasive species, which is an area clearly requiring much awareness raising, action and capacity building.

Even when important policies are finalized, regulations to make these policies legally binding often take many years to be approved. Regulations for the Environmental Management Act (2007) and the Forest Act (2001) are for example still not in place. This problem undermines the implementation of these policies and the proper enforcement of the punitive measures outlined in these acts.

Harmonization of policies relating to natural resource management is a much-cherished ideal in Namibia, however significant conflicts in policies still remain most obviously in agriculture. There is a clear trade off here between economic and political interests and environmental sustainability. From an environmental perspective it is difficult to justify the promotion of large-scale irrigation schemes in a country where availability of water is the main constraint to development, and the importance of biodiversity along perennial rivers (Ramsar sites at the Okavango delta (largest in the world) and Orange River mouth).

Evidence from other dryland countries suggests that these schemes tend to be unsustainable over the long term (the Murray Darling basin in Australia is a well known example of this). It is also noted in NDP3 that agriculture accounted for 74% of all water consumed in Namibia, while contributing just 7% to GDP in 2001/2. Value added per unit water used showed N$4.61per m^3 for commercial irrigation and N$-.49per m^3 for communal irrigation initiatives compared to a N$57.23per m^3 sector average (NDP3 pg.

123). Other concerns include pollution from fertilizers and herbicides as well as the focus on low value crops such as maize and wheat, which have high water demands. Similar concerns exist with regard to the nascent bio-fuels industry.

Overall it appears that the NDP3 system offers the most useful mechanism for monitoring how effectively biodiversity is being mainstreamed into Namibia's development process. While it is mainly focused on economic indicators, the KRA on sustainable development offers a real opportunity to further promote the importance of environmental sustainability to Namibia and to promote the notion of conservation and the sustainable use of wildlife and indigenous resources as being viable land uses from both an environmental and economic perspective. Useful baseline data on biodiversity is available from 2006, and the mid-term and end of cycle reporting requirements offer an opportunity to demonstrate systematically the improvements that biodiversity conservation and sustainable use are making to the economy, rural livelihoods and the environment.

3.3 National Coordination Mechanisms

Given the raft of different policies and institutions (not only ministries but also donors and other stakeholders) affecting biodiversity, it is clear that a coordinating mechanism is necessary to bring these stakeholders together. The National Biodiversity Task Force, formed in 1995 as part of the National Biodiversity Programme (NBP), which included eight ministries, tertiary education institutions, parastatals, the private sector, NGOs and unions, was recognized as a successful and innovative national coordinating mechanism. However the task force was never mainstreamed into the MET as had been planned for after the end of the NBP and external funding in 2005.

This void has been filled in an ad-hoc manner with a number of recent GEF-funded projects such as the CPP and NACOMA embracing a multi-stakeholder project steering committee approach. Other national mechanisms active in the areas of biodiversity conservation, sustainable use and the fair and equitable sharing of benefits include the IBPC and the IPTT, whose mandates are described in detail in section 2.3.2.1, both of which are functioning well. These are both government-mandated mechanisms and are well-anchored within the chairing ministries (MET for the IBPC and MAWF for the IPTT), which is important for their long-term sustainability.

The CPP programme can be seen as an umbrella organization that coordinates land management efforts across sectors. The management committee of the project is comprised of eight government ministries (MAWF, MET, MLR, MRLGHRD, MME, NPC, Ministry of Finance and MFMR), various NGOs, and UN agencies. The mandate of the CPP programme is to reduce land degradation through integrated cross-sectoral approaches, thereby contributing to environmental sustainability, and the preservation of dryland ecosystems and ecosystem services integrity. This is done through capacity building at institutional and individual levels and cross-sectoral coordination and implementation of ISLM activities and policies, which integrate environmental and economic objectives. The programme actively pursues synergies between climate change adaptation, biodiversity conservation and the battle against land degradation.

The NACOMA Project is also an example of a coordination mechanism to mainstream biodiversity conservation into wider development, albeit only along the coastal zone. The Government of the Republic of Namibia (GRN) is implementing the project with support from a MET Project Coordination Office (PCO) based in Swakopmund, which is responsible for the day-to-day project management and coordination. A Project Steering Committee guides MET and its project team in the implementation of

the project. It comprises of MET (chair) and MRLGHRD (deputy-chair), MFMR, MME, MAWF, Ministry of Works and Transport, NPC and Chief Executive Officers (CEOs) of Kunene, Erongo, Hardap and Karas Region. The sustainability of the CPP and NACOMA coordinating mechanisms beyond the project lifecycles are key challenges that both of these projects are currently trying to address.

Another potential national coordinating mechanism is the Sustainable Development Advisory Council. The establishment of this council is one of the requirements of the Environmental Management Act of 2007. It is to be appointed by the Minister of Environment and Tourism and composed of eight officials; four government and four non-government members who represent the interests of environmentally conscious organizations. The Act stipulates that the council must take a cross-sectoral approach and promote cooperation and coordination on environmental issues between the public and private sectors. The Council will also function as an advisor to the Minister on environmental policy development and evaluation, as well as monitoring environmental management compliance, and issues of biodiversity conservation, sustainable use of resources, and access to genetic resources. Thus it will have a vital role in mainstreaming and protecting biodiversity.

3.4 Tools for Mainstreaming Biodiversity

Namibia uses a number of tools to mainstream biodiversity effectively in its development. This section gives an indicative list of these tools. The application of many of these tools has been relatively recent in most cases, and therefore only a preliminary assessment is given of their effectiveness.

3.4.1 Environmental Management and Protection

Strategic Environmental Assessments SEAs

SEAs are a key tool to ensure that environmental considerations are better considered in the formulation and implementation of policies, plans and programmes, which are likely to have a significant impact on the environment. The Environmental Management Act of 2007 provides the overall framework for SEAs, and while the regulations for this Act have yet to be completed, a number of voluntary pilot SEAs have recently been conducted in Namibia, including an SEA on uranium mining in the Central Namib, on each of the Coastal regions to inform the decision making process affecting biodiversity and sustainable coastal development, and on bio-fuels in the north-eastern regions of Namibia.

The SEAs on uranium mining and bio-fuels provide a good example of highlighting the threats of economic development for biodiversity conservation. The uranium SEA assesses mining's impact on critical issues such as water and electricity supply, land use options, radiation and health, as well as tourism, social and transport infrastructure, all of which will have knock on effects on biodiversity in the Central Namib biodiversity hotspot. This SEA is not yet complete and counts as a more reactive tool in this case. The other SEAs are more proactive. The SEA for the coastal regions is being integrated into the planning process as a standard tool to accommodate natural-resource requirements, promote sustainable land use and to inform communal conservancies of environmental constraints (Nghitila *et al* 2009). In addition the data and findings from the coastal SEAs are being transferred into a Decision Support Tool in order to assist political and technical decision makers at local, regional and national level to make wise decisions on biodiversity, conservation, land use planning and social and economic development along the coastal zone. Bio-fuels plantations have not yet taken off on a large-scale basis in Namibia and the SEA will give a good advanced indication of their economic, social and environmental viability.

Environmental Impact Assessments (EIAs)
The Environmental Management Act of 2007 also lays the legal basis for EIAs in Namibia, which aim to better reflect environmental considerations in specific developments, which may impact on the environment. An EIA must contain:

- A description of the proposed project and its purpose
- A description of the environment that will be affected by the project and alternative projects
- A description of the potential environmental impact, and an estimation of the importance of the impact
- A description of the effects on Namibia's cultural heritage, as well as the social and economic costs
- A description of the mitigation measures
- A description the research, data, and predictions in the report
- Identification of gaps in knowledge or uncertainties about environmental impacts
- A description of steps taken to consult affected parties
- An outline for monitoring and evaluation strategy
- A description of rehabilitation and restoration measures
- A summary in non-technical language

So far the mandatory requirements of EIAs including environmental descriptions of the project area and the potential environmental impacts of the particular development, have been useful in improving our knowledge of local biodiversity, particularly of insect and plant species. A major challenge for the successful implementation of EIAs is that they are currently not legally binding and are only weakly enforced.

Biodiversity Offsets
Namibia does not currently have a biodiversity offset policy, however the concept appears very relevant in the context of Namibia's development. A preliminary workshop on the issue was held in Windhoek in 2010, in association with Fauna and Flora International and the Business and Biodiversity Offsets Programme, and it is being explored as to how this concept can be integrated into Namibia's existing frameworks.

Urban Area Environmental Management Plans (EMPs)
The MET recently commissioned four EMPs for the coastal towns of Henties Bay, Swakopmund, Luderitz, and Oranjemund, in light of the increasing demands being put on the resource base by these towns. The EMPs use a participatory approach to identify the root causes of key pressing environmental problems, the environmental and socio-economic impacts of these problems, and an action plan of how these problems. These EMPs are yet to be finalized, but stakeholder input meetings and focus groups occurred in July 2010 (SAEIA 2010).

A similar process is underway in Windhoek, though in this case instigated by the City of Windhoek Municipal Authority. A biodiversity inventory has been completed of Windhoek's municipal area and a biodiversity forum has been set up to collaboratively manage and address biodiversity issues in Windhoek.

3.4.2 Land Management and Land Use

Integrated Regional Land Use Plans (IRLUPs)
Integrated Regional Land Use Plans (IRLUPs) are intended to be a reference document to explore the biodiversity, land use capacity and the potential land use options for specific regions of the country. The MLR has begun to develop an IRLUP for the Karas region, which is to set the standard for further IRLUPs in Namibia. This IRLUP integrates elements of SEAs and also incorporates a policy review, assessment of conflicting and complementing land uses, stakeholder consultations, and data analysis.

The ultimate goal is to compile a plan that proposes the most optimal land use with consideration to both local level land uses, such as conservancies and small-scale farms, as well as more economic activities, such as mining and large-scale agriculture. In order for the IRLUPs to remain up to date and relevant, standard continuous adjustments must be made to account for changes in technology, such as the use of digital spatial GIS data, and new planning concepts. The Karas region IRLUP is making use of new research and planning techniques. This approach to IRLUPs accounts for biodiversity conservation by producing options and a rational basis for sustainable land use planning. As additional IRLUPs are completed using this standard method, biodiversity mainstreaming and conservation will be increasingly be accounted for in land use planning.

Devolved Decision Making and Capacity Building
Since the promulgation of the Communal Land Reform Act of 2002, communal land boards have emerged as a potentially useful tool for mainstreaming biodiversity conservation in rural areas. The land boards are multi-stakeholder entities with representatives from local traditional authorities, members of the local farming community, an officer from the regional council, two women engaged in farming activities, two women with expert knowledge relevant to the functions of the Land Board, one representative of conservancies, and one representative from the MLR, MET, MAWF and MRLGHRD.

While communal land boards are not directly mandated to conserve biodiversity, their decisions have the potential to negatively affect the environment in communal areas. Land allocated for agricultural plots can lead to over clearing and deforestation, which can damage natural habitats and riparian zones. Land board decisions on tourism and other economic developments can also affect the environment through increases in pollution and soil erosion. In an effort to mainstream biodiversity conservation, the MET and MLR developed a training course for Communal Land Boards on “Sustainable Development and Environmentally-sound Decision-Making. In addition, all land boards received a special checklist to aid in sustainable development and environmentally conscious decision-making on leasehold applications. In this way the land boards have a major role to play in environmentally sustainable development in rural areas.

The evidence from the NACOMA project’s attempts at supporting decentralization suggests that similar capacity building and support is needed for Namibia’s Regional Councils so that they are able to ensure effective environmental protection. Challenges that need to be addressed in this regard include limited funding, the absence of empowering legislation, limited involvement by MET’s regional and national staff and delays in devolving some of its functions to the sub-national level.

Ecosystem Approach and the CBNRM Programme
At COP5 to the CBD in 2005, the ecosystem approach was endorsed and it was recommended that parties apply this approach. The CBD defines the ecosystem approach as “a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Application of the ecosystem approach will help to reach a balance of the three

objectives of the convention: conservation; sustainable use; and the fair and equitable sharing of benefits arising out of the utilization of genetic resources."

The ICEMA project has been driving the implementation of the ecosystem approach in Namibia since 2004 with excellent results. It supports the activities of 16 targeted conservancies within the larger national CBNRM framework. The main aim of the ICEMA Project is to conserve the natural resources of its target conservancies and to encourage their sustainable use so as to promote the development of economic activities which are both environmentally sound and profitable to the community. This innovative and promising approach has been hindered by strong constraints: low investment capacity in the local communities, important needs in training, land insecurity, veterinary restrictions, lack of co-ordination, and the necessity of improving the technologies of biodiversity valorisation.

The Project invests in two main components, namely, high value plant species and high value animal species (HVAS), to assist communities in overcoming the afore-mentioned constraints. With respect to high value plant species, examples of major activities undertaken include the scaling up of supply chains for various indigenous plant products such as Kalahari Melon seeds and Ximenia kernels, support to honey production initiatives, expanding the sustainable harvesting and organic certification of Devil's Claw tubers and supporting cultivation of Hoodia plants in the South.

With respect to high value animal species, the major activity undertaken has been game translocations to communal conservancies. Some 10,000 head of wildife has been translocated to communal conservancies over the past decade, often involving the reintroduction of species into areas that had been part of their historic range. The ICEMA Project has developed a number of innovative approaches to ensure that the contribution of wildlife to community livelihoods is sustained. These include equipment that supports the monitoring of the introduced game, such as radio collars. Aerial surveys and annual game counts have also been conducted in the different regions, while areas within many of the conservancies have been zoned exclusively for wildlife and tourism purposes. Translocations and the sustainable utilization of wildlife by communities have proved very successful tools in meeting the objectives of the convention. The ICEMA project has set an excellent best practice example for other conservancies and rural communities to follow, and many of its excellent activities are now being built on by the MCA and the wider CBNRM programme.

3.4.3 Working Groups

Working groups in Namibia have played an important role in the past in many aspects relating to biodiversity conservation. The 21 technical working groups set up during the NBP played a central role in implementing Namibia's NBP and in formulating the NBSAP. While these working groups operated with varying degrees of success, the overall achievements of the working groups were excellent and wide-ranging in scope. Many of the working groups were adversely affected by the termination of funding associated with the end of the NBP and the collapse of the BDTF as a coordinating mechanism.

Nevertheless the evidence from Namibia suggests that only a small level of funding is required for these working groups. The alliance of a core group of voluntary dedicated and diverse persons offers a flexible platform for the efficient achievement of objectives. In the case of the NBP's technical working groups, these achievements ranged from policy formulation to the computerization of a vast amount of biodiversity-related data to awareness-raising and knowledge management.

While many of these groups are no longer functional, some have diversified and become more specialized such as the Crane Action Group and the Birds of Prey Action Group. The CPP and CBNRM

programmes have both set up cross-sectoral working groups to improve their functioning mechanisms. For example the natural resources working group of the CBNRM programme, coordinated by the NNF, has proved an effective tool to address institutional issues for conservancies as well as livelihood improvement strategies. The integrated natural resources working group of the CPP aims to harmonize the sustainable land management policy environment by identifying and ironing out policy conflicts.

3.5 Synergies in National Implementation of Related Conventions

Namibia has signed and ratified all of the Rio Conventions: the UN Convention to Combat Desertification (UNCCD), the UN Framework Convention on Climate Change (UNFCCC) and the Convention on Biological Diversity (CBD) and its associated Cartagena Protocol on Bio-safety. Other relevant Conventions Namibia adheres to include the Ramsar Convention on Wetlands and the Convention on International Trade in Endangered Species (CITES).

Synergies between the Rio Conventions are clearly being pursued through initiatives such as the CPP programme. The linkages between climate change, biodiversity loss and land degradation are well recognized by government institutions, NGOs and donors alike. The Climate Change Adaptation (CCA) Project through the improvement of traditional crops and livestock farming is a good example of the pursuit of such synergies. Studies such as that on the impact of climate change on Namibia's protected areas is another example of how Namibia is exploring the linkages of these conventions.

There is room for improved coordination between the implementation of the CITES and UNCBD conventions. For example threats such as alien invasive species need to be addressed through close collaboration between the implementing agents of these conventions. Stricter control measures with regard to the trade of resources are especially required.

3.6 Biodiversity considered in International Development Assistance Programmes

Biodiversity is very well considered in international development assistance programmes and typically benefits from support in the focal areas of natural resources management and rural development. Examples of specific bi-lateral investments into biodiversity-related areas include support from the German Agency for Technical Cooperation (GTZ), on behalf of the German Ministry for Economic Cooperation (BMZ), to the MET in the areas of biodiversity and sustainable land management. The German Development Bank (KfW) is supporting various projects such as the strengthening of the management of parks in north-eastern Namibia, and N$33 million was recently pledged to phase II of this project (MET 2010b). The German Development Service (DED) is also the key supporting agent behind community-forestry projects in northern Namibia. The German Ministry of Education and Research is to invest 50 Mio Euro over the coming 4 years for the establishment of the Regional Science Service Center (RSSC), a newly established transboundary programme with strong biodiversity conservation relevance.

The French Government has also co-financed several of the GEF projects, most notably NACOMA and ICEMA, while the Spanish Agency for Development is also supporting the development of tourist information centres in remote communal conservancies. In addition a national climate change adaptation project (Namibia African Adaptation Project) was launched in 2010 with support from the Government of Japan.

As part of a bilateral agreement between the USA and Namibia, the Millennium Challenge Account (MCA) is implementing some US$57.2 million worth of funding to improve the management and infrastructure of Etosha National Park and to develop the capacity of communal conservancies to attract investments in ecotourism and to capture a greater share of the revenue generated by tourism. A further US$25.8 million is being put towards the diversification of livelihoods for rural farmers by the MCA through support to livestock development and the indigenous natural products industry (CPP in press). The MCA project got underway in 2009 and is set to run for five years.

NBSAP Strategic Objective VII: Integrated Planning for Biodiversity Conservation and Sustainable Development

Outcome 7.1:
Mechanisms for integrating sectoral planning and implementation activities improved

Progress

- A new framework for IRLUPs has been developed taking into account environmental considerations and conservancies and community forests as viable land uses
- Communal Land Boards fully operational
- SEAs and EIAs are now mandatory for a range of activities that may impact negatively on the environment
- Awareness-raising on biodiversity issues has increased particularly in light of 2010 being the International Year of Biodiversity

Achievement of Specific Targets

- **Sustainable Development Commission established and existing intersectoral fora on land issues strengthened** ➲
- **Seminars, awareness days and written materials targeted at government planners, farmers and other resource users delivered on a regular basis** ✓
- **Working groups of the biodiversity task force and related organisations strengthened and broadened** ✗
- **Bi-annual public fora on biodiversity conservation established** ➲

Challenges

- Slow processing of regulations for the Environmental Management Act, which will make SEAs and EIAs legally binding instruments
- Slow processing of regulations for the Environmental Management Act has also delayed the establishment of the Sustainable Development Commission
- Many working groups collapsed after the termination of the NBDTF

Outcome 7.2:
Policy and legal frameworks streamlined and reviewed

Progress

- Policy review of policies relating to sustainable land management undertaken and recommendations and best practices suggested to improve policy implementation and harmonization
- Integrated Natural Resources Working Group set up under the auspices of the CPP programme

Achievement of Specific Targets

- **Comprehensive policy review, and agreed revisions to relevant policies and legislation enacted and implemented** ➲

Challenges

- Ongoing policy conflict and inappropriate resource uses continue to pose threats to biodiversity conservation

Outcome 7.3:
Government's decentralization process strengthened through regional biodiversity and environmental management

Progress

- The NACOMA project has followed an approach seeking to devolve authority over environmental issues to Regional Councils, Local Authorities and Local Municipalities
- Projects such as ICEMA have trained MET Regional Staff in diverse areas such as resource monitoring and IT skills
- Restructuring process underway within MET involving measures aimed to increase devolution and decentralization

Achievement of Specific Targets

- **Regional Councils' capacities and responsibilities clearly defined through a "vertical" process of dialogue among government and other stakeholders** ➲
- **Appropriate capacity building strategies for MET's regional offices formulated and implemented** ✓
- **Appropriate strategy for devolution of biodiversity management responsibility and authority to natural resource managers formulated and implemented** ➲

Challenges

- Limited funding
- Absence of empowering legislation
- Limited involvement by MET's regional and national staff and delays in devolving some of its functions to the sub-national level.

Outcome 7.4:
Partnership between Government, NGOs and the private sector fostered

Progress

- Private sector has become a key partner in the conservation of biodiversity in Namibia
- Key focal areas include supporting conservation-based enterprises and biodiversity-related research, development of private nature reserves and restoration ecology

Achievement of Specific Targets

- **At least 20 public-private partnerships for effective biodiversity conservation underway nationwide and demonstrating positive results** ✓

Chapter IV: progress towards the 2010 Biodiversity Target

4.1 Overall Assessment of progress towards the 2010 target

Namibia has made great overall progress towards the 2010 target of reducing biodiversity loss. While the NBSAP was not formally aligned to the Global 2010 Target, the active implementation of the NBSAP has played in important role in helping Namibia achieve the 2010 target.

Considerable progress has been made towards the vast majority of sub goals, particularly the protection of the components of biodiversity; conservation of species diversity; promotion of sustainable sustainable use; fair and equitable benefit sharing; and in the maintenance of socio-cultural diversity of indigenous and local communities. Some goals causing concern include the threat from alien invasive species, the conservation of genetic diversity and an inadequate legal framework for the control of pollution

A summary of progress includes that:

- The protected area network has expanded to cover comprehensively its two global "biodiversity hotspots"
- Namibia's entire coastal zone, home to many endemic species, is now also under the highest form of conservation management.
- Collaborative management approaches have been initiated in a number of conservation areas to improve wildlife connectivity
- Rights over wildlife and other natural resources have been devolved to communities, which are promoting the sustainable use of these resources based on participatory monitoring activities.
- Rising numbers of large mammals, including rare and threatened species, is the prevailing trend in Namibia
- Threats to biodiversity are also being addressed mainly thorugh the development of appropriate policy and legislation, but also in increased investment and real efforts to mainsteam the importance of biodiversity conservation and sustainable development across sectors

The table in section 4.2 offers a more detailed description of progress made per goal of the 2010 Target.

4.2 Table for assessing progress towards the 2010 target

Goals and targets	***Relevant Strategic Plan Indicator***	***Namibia's Progress***
Protect the components of biodiversity		
Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes		
Target 1.1: At least 10% of each of the world's ecological regions effectively conserved.	• Coverage of protected areas • Trends in extent of selected biomes, ecosystems and habitats • Trends in abundance of selected species	• Approximately 40% of Namibia now under the protected area network (17% covered by state-protected areas) • Over 22% of all Namibia's biomes are under some form of conservation management (see table 5) • 16 of Namibia's 29 vegetation zones have over 10% of their area under some form of conservation management (see table 6) • 90.5% of the Succulent Karoo "biodiversity hotspot" now protected, compared to 11% in 2005 (see table 5) • 22% of Nama Karoo, and 92.5% of Namib Desert biomes (containing Namibia's other hotspot "The Great Western Escarpment") now under some form of conservation management (see table 5) • Wildlife numbers increasing across Namibia, including threatened and endemic species such as black rhino, black-faced impala and hartmann's zebra
Target 1.2: Areas of particular importance to biodiversity protected	• Trends in extent of selected biomes, ecosystems and habitats • Trends in abundance and distribution of selected species • Coverage of protected areas	• 90.5% of the Succulent Karoo "biodiversity hotspot" now protected, compared to 11% in 2005 (see table 5) • 22% of Nama Karoo, and 92.5% of Namib Desert biomes (containing Namibia's other hotspot "The Great Western Escarpment") now under some form of conservation management (see table 5) • Wildlife numbers increasing across Namibia, including threatened and endemic species such as black rhino, black-faced impala and hartmann's zebra
Goal 2. Promote the conservation of species diversity		
Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups.	• Trends in abundance and distribution of selected species • Change in status of threatened	• Wildlife numbers increasing across Namibia, including threatened and endemic species such as black rhino, black-faced impala and hartmann's zebra

Goals and targets	*Relevant Strategic Plan Indicator*	*Namibia's Progress*
	species	• Management plans drafted for priority species in Namibia such as hippopotamus; elephants; black rhino; wetland grazers; roan, sable and tssesebe; black-faced impala • Action groups set up for the conservation and monitoring of threatened bird species such as the blue crane
Target 2.2: Status of threatened species improved.	• Change in status of threatened species • Trends in abundance of selected species • Coverage of protected areas	• Wildlife numbers increasing across Namibia, including threatened and endemic species such as black rhino, black-faced impala and hartmann's zebra • Management plans drafted for priority species in Namibia such as hippopotamus; elephants; black rhino; wetland grazers; roan, sable and tssesebe; black-faced impala • Action groups set up for the conservation and monitoring of threatened bird species such as the blue crane • Approximately 40% of Namibia now under the protected area network (17% covered by state-protected areas)
Goal 3. Promote the conservation of genetic diversity		
Target 3.1: Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.	• Trends in genetic diversity of domesticated animals, cultivated plants and fish species of major socio-economic importance • Biodiversity used in food and medicine • Trends in abundance and distribution of selected species	• Improved seed varieties of pearl millet, sorghum bambara groundnuts, cowpea and sweet potato have been developed and adopted in the communal areas • Genetic erosion of the highly-valued and endemic black-faced impala from hybridization with the common impala is being addressed • Strict measures against GMOs and invasive species are being implemented as outlined in the Aquaculture Act (2002) • IPTT is promoting the development of indigenous natural plant products industry (for medicinal, cosmetic and food-related applications), based on sustainable use priniciples and building on the traditional knowledge of communities (see section 2.3.2)
Promote sustainable use		
Goal 4. Promote sustainable use and consumption.		

Goals and targets	*Relevant Strategic Plan Indicator*	*Namibia's Progress*
Target 4.1: Biodiversity-based products derived from sources that are sustainably managed, and production areas managed consistent with the conservation of biodiversity.	• Area of forest, agriculture and aquaculture systems under sustainable management • Proportion of products derived from sustainable sources • Trends in abundance and distribution of selected species • Marine Trophic Index • Nitrogen deposition • Water quality in aquatic ecosystems	• 1.6 million hectares of land now under community forests with harvest allocations based on sustainable forest management plans • Communal conservancies and freehold wildlife management units now cover approximately 22.3% of Namibia (see table 5) • Small-scale conservation agriculture projects and sustainable rangeland management techniques have been pioneered • Namibia Organic Association launched in 2009 • Water pollution control measures outlined in Water Resources Management Act (2004) but no formal system of water quality monitoring in place
Target 4.2. Unsustainable consumption, of biological resources, or that impacts upon biodiversity, reduced.	• Ecological footprint and related concepts	• Concerns regarding an increase in the unsustainable harvesting of devil's claw prompted a revised policy approved by cabinet in 2010 • Illegal harvesting of forest products and poaching of wildlife being addressed through the framework of community forests and communal conservancies • Restrictive Total Allowable Catches (TACs) are used to ensure the sustainability of Namibia's commercial fishing industry, especially for declining stocks such as sardines
Target 4.3: No species of wild flora or fauna endangered by international trade.	• Change in status of threatened species	• A number of endemic plant species are threatened by the illegal pachycaul trade (see table 2) • Concerns about high instances of black rhino poaching in South Africa and the possiblilty of spillover into Namibia given our increasing numbers • Transborder flow of GMOs is a threat to indigenous biodiversity • Training has been provided to customs officials on how to verify export and CITES permits • Capacity and resources to control illegal harvesting is a challenge
Address threats to biodiversity		
Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced.		
Target 5.1. Rate of loss and degradation of natural habitats	• Trends in extent of selected	• Land Degradation Monitoring system, taking into

Goals and targets	***Relevant Strategic Plan Indicator***	***Namibia's Progress***
decreased.	biomes, ecosystems and habitats • Trends in abundance and distribution of selected species • Marine Trophic Index	account biophysical and socio-economic indicators, under development • Substantial increases in the protected area network since 2005 • In-situ conservation improving through increase in protected area network and projects such as ICEMA, which focus on both flora and fauna
Goal 6. Control threats from invasive alien species		
Target 6.1. Pathways for major potential alien invasive species controlled.	• Trends in invasive species	• Namibia's most important plant and animal invasive species have been identified • Capacity and resources constraints to control the pathways for major potential alien invasive species is a challenge
Target 6. 2. Management plans in place for major alien species that threaten ecosystems, habitats or species.	• Trends in invasive species	• MAWF's programme to biologically control the aquatic weed *Salvinia molesta* is ongoing • MFMR's Aquaculture Act (2002) places strict restrictions on the import or transplanting of aquatic organisms, which are being enforced • Planting of *Prosopis spp*. banned in Windhoek area • Many bush encroachment clearing programmes underway through the directorate of forestry, NGOs and commercial farmers (see section 2.3.3.4)
Goal 7. Address challenges to biodiversity from climate change, and pollution		
Target 7.1. Maintain and enhance resilience of the components of biodiversity to adapt to climate change.	• Connectivity/fragmentation of ecosystems	• Collaborative management approaches have been implemented incorporating state-protected areas, conservancies and community forests (see Mudumu North Complex case study) • Project proposal submitted to the GEF in 2010 to establish Protected Landscape Conservation Areas and to ensure that land uses in areas adjacent to existing protected areas are compatible with biodiversity conservation objectives, and that corridors are established to sustain the viability of wildlife populations
Target 7.2. Reduce pollution and its impacts on biodiversity.	• Nitrogen deposition • Water quality in aquatic ecosystems	• Water pollution control measures outlined in Water Resources Management Act (2004) but no formal system of water quality monitoring in place • Polluter pays principle to be enforced through the

Goals and targets	*Relevant Strategic Plan Indicator*	*Namibia's Progress*
		Environmental Management Act (2007) • Environmental Management Plans under development for coastal towns
Maintain goods and services from biodiversity to support human well-being		
Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods		
Target 8.1. Capacity of ecosystems to deliver goods and services maintained.	• Biodiversity used in food and medicine • Water quality in aquatic ecosystems • Marine trophic index • Incidence of human induced ecosystem failure	• Research on environmental flows has been carried out on the Okavango and Orange river basins (Orange river mouth: threatened Ramsar site and example of human-induced ecosystem failure) • Sustainable use of biodiversity is well-anchored in rural populations through the CBNRM programme and associated projects as well as through the efforts of the IPTT since 2001, IBPC since 2008, and the private sector
Target 8.2. Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained.	• Health and well-being of communities who depend directly on local ecosystem goods and services • Biodiversity used in food and medicine	• IPTT is promoting the development of indigenous natural plant products industry (for medicinal, cosmetic and food-related applications), based on sustainable use priniciples and building on the traditional knowledge of communities (see section 2.3.2) • Indigenous plants are particularly concentrated in communal areas, and have much potential for poverty alleviation especially in light of MCA investment support
Protect traditional knowledge, innovations and practices		
Goal 9 Maintain socio-cultural diversity of indigenous and local communities		
Target 9.1. Protect traditional knowledge, innovations and practices.	• Status and trends of linguistic diversity and numbers of speakers of indigenous languages • Additional indicators being developed	• First ABS agreement signed, which recognizes the traditional knowledge and sustainable harvesting practices of the Ovahimba community for *Commiphora wildii* • Project underway to document farmer's crop conservation practices in Oshana region
Target 9.2. Protect the rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefit-sharing.	• Indicator to be developed	• IBPC established in 2008 (see also target 9.1)
Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources		
Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources		
Target 10.1. All access to genetic resources is in line with the	• Indicator to be developed	• Strategic aims of the NBSAP closely aligned to the

Goals and targets	***Relevant Strategic Plan Indicator***	***Namibia's Progress***
Convention on Biological Diversity and its relevant provisions.		provisions of the CBD • IBPC is facilitating access to genetic resources and traditional knowledge and controlling bioprospecting
Target 10.2. Benefits arising from the commercial and other utilization of genetic resources shared in a fair and equitable way with the countries providing such resources in line with the Convention on Biological Diversity and its relevant provisions	• Indicator to be developed	• As above
Ensure provision of adequate resources		
Goal 11: Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention		
Target 11.1. New and additional financial resources are transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20.	• Official development assistance provided in support of the convention	• Namibia has received substantial assistance from the GEF, and through bi-lateral agreements much of which is focused in biodiversity-related areas (see sections 2.2.1.3, 2.2.1.4 and 3.6)
Target 11.2. Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph 4.	• Indicator to be developed	• Technology transfer has occurred to an extent through projects such as the Millennium Seed Bank Project and other bi-lateral programmes • Namibia has technological needs in the areas of wildlife monitoring particularly in the context of increasing human wildlife conflict

4.3 Progress towards goals and objectives of the Strategic Plan

Goals and objectives	Namibia's Progress towards the 2010 Target since the NR3 (2005)
Goal 1: The Convention is fulfilling its leadership role in international biodiversity issues.	
1.1 The Convention is setting the global biodiversity agenda.	• This goal is to be achieved at the convention rather than national level – see section 2.5 for a summary of Namibia's actions to implement the CBD thematic programme areas and cross-cutting issues
1.2 The Convention is promoting cooperation between all relevant international instruments and processes to enhance policy coherence.	• Final draft treaty for the establishment of the Kavango Zambezi TFCA developed • Joint management of the Ai-/Ais TFCA operational with South Africa • Namibia actively engaged in the Benguela Current Commission with Angola and South Africa • Memorandum of understanding signed between Namibia and Angola to establish the Skeleton Coast/Iona TBPA • Kalahari/Namib (transboundary rangeland management project) and a Regional Scientific Services Centre under development
1.3 Other international processes are actively supporting implementation of the Convention, in a manner consistent with their respective frameworks.	• Namibia is promoting the sustainable management of transboundary river resources mainly through active participation in OKACOM and ORASECOM
1.4 The Cartagena Protocol on Biosafety is widely implemented.	• Biosafety Act promulgated in 2006 and draft regulations have been developed
1.5 Biodiversity concerns are being integrated into relevant sectoral or cross-sectoral plans, programmes and policies at the regional and global levels.	• Biodiversity concerns are well-integrated into existing cross-sectoral plans (NDP3) and into recently developed relevant policies, programmes and legislation (see sections 3.2-3.5) • Namibia continues to honour its commitments to the SADC Protocols on shared watercourses and fisheries, and also is implementing the initiatives of the SADC Plant Genetic Resources Centre
1.6 Parties are collaborating at the regional and subregional levels to implement the Convention.	• Namibia continues to enjoy good cooperation with its neighbours in the areas of fisheries management, transboundary water resources management and cross-border species management • Every River has its People Project (Okavango river) has facilitated various best practice-related exchanges between communities in Botswana, Namibia and Angola
Goal 2: Parties have improved financial, human, scientific, technical, and technological capacity to implement the Convention.	
2.1 All Parties have adequate capacity for implementation of priority actions in national biodiversity strategy and action plans.	• CEGEM Project (2009-2012) is building on Namibia's National Capacity Self-Assessment, and aims specifically to enhance Namibia's capacity to implement global environmental conventions • Capacity building strategies and action plans developed by the NACOMA and CPP

	Projects mainly targeting government staff and service providers • Local level capacity building has been facilitated through a wide variety of training programmes typically associated with the CBNRM programme
2.2 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have sufficient resources available to implement the three objectives of the Convention.	• Regional and national GEF-funded projects have invested approx. US$57.5 million in Namibia since 2001 • Estimated bi-lateral investment totaling 2,838,977,646 by Namibia's top 11 partners with the environment sector well represented in the targeted focal areas
2.3 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have increased resources and technology transfer available to implement the Cartagena Protocol on Biosafety.	•
2.4 All Parties have adequate capacity to implement the Cartagena Protocol on Biosafety.	• One capacity building project came to an end in 2009, and is to be replaced by another aiming at the implementation of the Cartagena Protocol on Biosafety in late 2010
2.5 Technical and scientific cooperation is making a significant contribution to building capacity.	• Namibia continues to actively participate in various international and scientific fora such as SBSSTA and CST
Goal 3: National biodiversity strategies and action plans and the integration of biodiversity concerns into relevant sectors serve as an effective framework for the implementation of the objectives of the Convention.	
3.1 Every Party has effective national strategies, plans and programmes in place to provide a national framework for implementing the three objectives of the Convention and to set clear national priorities.	• Namibia has been implementing its NBSAP (2001-2010) and it has mainstreamed the objectives of the CBD into a number of other national strategies, plans, and programmes (see chapter III for further details)
3.2 Every Party to the Cartagena Protocol on Biosafety has a regulatory framework in place and functioning to implement the Protocol.	• Namibia promulgated its Biosafety Act in 2006. Regulations and guidelines have been drafted but not yet functional
3.3 Biodiversity concerns are being integrated into relevant national sectoral and cross-sectoral plans, programmes and policies.	• Biodiversity concerns are integrated into relevant national, sectoral and cross-sectoral plans, programmes and policies (see chapter III)
3.4 The priorities in national biodiversity strategies and action plans are being actively implemented, as a means to achieve national implementation of the Convention, and as a significant contribution towards the global biodiversity agenda.	• The 55 strategic aims of Namibia's NBSAP are actively being implemented (see section 2.3 for more detailed information on this) • Contribution of these endeavours towards the global biodiversity agenda is reflected in section 4.2, and Annex III)
Goal 4: There is a better understanding of the importance of biodiversity and of the Convention, and this has led to broader engagement across society in implementation.	
4.1 All Parties are implementing a communication,	• Environmental Education policy is being developed by MET with support from the CEGEM

education, and public awareness strategy and promoting public participation in support of the Convention.	Project • The Environmental Education and Information Sevices Unit within MET leads the coordination of environmental awareness raising within Namibia • Multi-stakeholder steering committee set up to coordinate a calendar of events to celebrate IYB 2010
4.2 Every Party to the Cartagena Protocol on Biosafety is promoting and facilitating public awareness, education and participation in support of the Protocol.	• Limited public awareness raising has been carried out in support of the Protocol
4.3 Indigenous and local communities are effectively involved in implementation and in the processes of the Convention, at national, regional and international levels.	• Indigenous and local are very effectively involved in the implementation and processes of the convention • The CBNRM programme and legislation such as the tourism concessions policy (2007) has facilitated the equitable sharing of benefits to indigenous and local communities based on biodiversity conservation and sustainable use
4.4 Key actors and stakeholders, including the private sector, are engaged in partnership to implement the Convention and are integrating biodiversity concerns into their relevant sectoral and cross-sectoral plans, programmes and policies.	• Namibia continues to be characterized by an excellent partnership approach (evident in the structure of new programmes such as the CPP) to implementing the convention involving government agencies, NGOs, donors, tertiary institutions as well as the private sector • Private sector is integral to the implementation of the CBD in Namibia • Examples include 140 Private reserves covering an area of 760,000 ha, corporate social responsibility initiatives of private companies supporting conservation research and projects, and joint venture agreements between the private sector and local communities (tourism and indigenous plant products)

4.4 Overall assessment of implementation of the Convention

This Fourth National Report has provided a useful analysis of Namibia's overall progress in implementing the CBD, as well as a more specific, albeit preliminary, analysis of its implementation of the NBSAP. Results have showed that Namibia has performed remarkably well in terms of reaching the targets laid out in its NBSAP. 42.4% of the specific targets were deemed to have been fully achieved, while a further 38.4% were classified as partly achieved. Figure 17 also suggests that the NBSAP has played a major role in targeting resources and actions into key thematic areas, which has greatly improved Namibia's overall implementation of the Convention.

Despite the fact that the coordinating mechanism envisaged for the NBSAP did not work out as planned, the NBSAP performed particularly well. The role of the NBSAP in focusing investment from GEF-funded projects and international assistance into key biodiversity target areas was particularly significant. GEF-funded projects such as NACOMA, SPAN and ICEMA have made a great impact in these specific areas and there are encouraging signs that this work is being built on using international assistance from other sources. For example the MCA is putting significant investments into the upgrading of Etosha National Park, the scaling up of local level monitoring techniques and support to Namibia's Indigenous Natural Plants industry. Other examples include investment from the German Federal Ministry for Economic Cooperation and Development, through the GTZ, KfW and DED, into capacity building in support of MET in the areas of biodiversity and sustainable land management, the development of national parks in the north-east, and support to the nascent community forest programme.

The NBSAP was also a useful reference document for different ministries in mainstreaming biodiversity into their own strategic action plans and policies. Positive examples of government legislation guided by elements of the NBSAP include NDP3, the Forest Act of 2001, which paved the way for the establishment of community forests, and the Aquaculture Act (2002), which lays down strong guidelines for environmental sustainability and measures against invasive species and genetically modified organisms. Meanwhile an innovative and progressive partnership approach involving government, donors, NGOs and the private sector has been functioning well in the implementation of Namibia's expanding CBNRM programme.

Key areas of weakness were also identified in this report and include:

- Delays in the finalization of important policies
- Inadequate means to properly implement and enforce key policies
- Slow processing of regulations
- Lack of human and financial capacity for research
- Inadequate frameworks to address alien invasive species

While this report has thus proved a very useful exercise, a more thorough analysis of the NBSAP was beyond its scope and is a much-needed and indeed urgent exercise. With the current NBSAP coming to a close in 2010, there is a clear need to find a suitable mechanism to develop a new, updated and improved NBSAP, based on strong analysis of lessons learned from Namibia's first NBSAP. Key issues to consider that have been largely beyond the realm of this report include:

- Target setting: A rigorous evaluation of the targets laid out in the NBSAP would be a useful exercise addressing whether the targets were too ambitious or otherwise, and whether they have made a real difference to biodiversity conservation, and how best appropriate targets can be set in the future.

- NBSAP Mode of Implementation: how best could a new NBSAP be coordinated? The approach of institutionalizing the current NBSAP within MET did not materialize. A restructuring process is currently underway within MET and increasing budgetary allocations are being granted to the ministry. These could represent opportunities to mainstream a biodiversity-specific unit within MET or perhaps alternative coordinating mechanisms ought to be developed.
- Coordination of donor support: Given the wide array of donor support activities being undertaken relating to the environment sector, it is important that these activities are coordinated in an efficient manner so as to avoid duplication and maximize the impact of resource investments.
- Sustainability of GEF projects: While the vital contribution made by GEF-funded projects has been highlighted throughout this report, their sustainability after project termination is a challenging issue for Namibia.
- Pragmatic approach: At the time of the last NBSAP formulation, GEF-funded projects had not even been established in Namibia, and were not listed as potential implementing agents of the NBSAP's objectives. The subsequent key role they have played suggests that a fluid and flexible approach to planning for effective implementation of the Convention is necessary.

These are among the key priority areas that need to be addressed to ensure Namibia's optimal implementation of the UNCBD.

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Namibian Ministry of Mines and Energy: www.mme.gov.na
National Planning Commission: www.npc.gov.na
Strengthening the Protected Area Network (SPAN): www.span.org.na
Support to Natural Resources Management in Namibia: Biodiversity and Sustainable Land Management. CD-Rom produced by the German Agency for Technical Cooperation (GTZ) and Government of the Republic of Namibia (2008).
Support to Natural Resources Management in Namibia: Support to Land Reform. CD-Rom produced by the German Agency for Technical Cooperation (GTZ) and Government of the Republic of Namibia (2008).
Support to Natural Resources Management in Namibia: Water Basin Management. CD-Rom produced by the German Agency for Technical Cooperation (GTZ) and Government of the Republic of Namibia (2008).
UN Convention on Biological Diversity (UNCBD): www.cbd.int

Appendix I: Reporting Party and Report Preparation
A. Reporting Party

Contracting Party	**REPUBLIC OF NAMIBIA**
NATIONAL FOCAL POINT	
Full name of the institution	**DIRECTORATE OF ENVIRONMENTAL AFFAIRS**
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CONTACT OFFICER FOR NATIONAL REPORT (IF DIFFERENT FROM ABOVE)	
Full name of the institution	**DIRECTORATE OF ENVIRONMENTAL AFFAIRS**
Name and title of contact officer	**MS. KAUNA SCHROEDER** **NAMIBIAN ABS FOCAL POINT**
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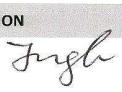
SUBMISSION	
Signature of officer responsible for submitting national report	
Date of Submission	**2nd September 2010**

B. Process of preparation of national report

The Ministry of Environment and Tourism (MET) is the implementing agent of the UN Convention on Biological Diversity on behalf of the Government of the Republic of Namibia. As such it played the lead role in compiling this report.

Relevant data was firstly collected from a wide variety of sources including from respective ministries, NGOs, donor-funded projects, tertiary institutions, individuals and private institutions. From this data a loose first draft of the report was completed and sent on to the relevant stakeholders for their comments. After this step a number of key stakeholders were identified, and interviewed on a one-to-one basis to gain their insights and to shore up the information gaps identified in the initial draft report. Particular focus here was given to people who had been directly involved in the formulation and the implementation of the NBSAP. Those interviewed in depth include:

- Teofilus Nghitila (Namibia's focal point to the UNCBD)
- Sem Shikongo (MET and one of the key persons involved in the formulation and implementation of the NBSAP)
- Kenneth /Uiseb (Deputy Director of Scientific Services (MET))
- Gillian Maggs-Koelling (Deputy Director of Forestry (MAWF) and former head of NBRI)
- Ben Strohbach (Vegetation Ecologist with NBRI)
- Martha Kandawa Schulz (Biotechnologist at the UNAM)
- Garca D'Almeida (Deputy Director of Resource Management MFMR)
- Chris Brown (Executive Director of Namibia Nature Foundation)
- Shirley Bethune (Polytechnic of Namibia, aquatic ecologist and former National Desertification coordinator
- Juliane Zeidler (Senior consultant with IECN and closely involved in the formulation and implementation of the NBSAP)
- John Irish (Independent environmental consultant and former biosystematics coordinator)

Based on inputs from these exports the initial draft report was refined into a final draft, which was subsequently submitted to the four directors of environmental affairs; parks and wildlife management; scientific services; and tourism for their comments and approval.

After the incorporation of their comments, the final draft was submitted to cabinet for approval. With cabinet's approval it was then duly submitted to the UNCBD secretariat.

Appendix II: Consultation with Stakeholders

The following persons were consulted for their inputs into this report:

Person	Institution	Contact
1. Joseph Hailwa	MAWF (Director of Forestry)	hailwaj@mawf.gov.na
2. Gillian Maggs-Kolling	MAWF (Deputy Director Forest Management)	gillianm@mawf.gov.na
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7. Teo Nghitila	MET (Director of Environmental Affairs and Namibia's CBD focal point)	tnghitila@yahoo.com
8. Sem Shikongo	MET (Director of Tourism and heavily involved in the implementation of the UN Conventions in Namibia)	S_shikongo@hotmail.com
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10. Ben Beytell	MET (Director of Parks and Wildlife Management)	bbeytel@met.na
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12. Michael Sibalatani	SPAN Project Coordinator	michael@span.org.na
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14. Eckerhardt Klingelhoeffer	MFMR (Director ofAquaculture)	eklingelhoeffer@mfmr.gov.na
15. Chris Bartolomae	MFMR (NACOMA focal point)	cbartholomae@mfmr.gov.na
16. Rod Braby	NACOMA Project Coordinator	rbraby@nacoma.org.na
17. Ben Strohbach	NBRI Vegetation Ecologist	bens@nbri.org.na
18. Chris Brown	NNF	cb@nnf.org.na
19. Juliane Zeidler	IECN Senior Consultant	jzeidler@iecn-namibia.com
20. John Irish	Independent Environmental	jirish@mweb.com.na

	Consultant and former Biosystematics Coordinator	
21. Antje Burke	Environmental Consultant	Antje.burke@enviro-science.info
22. P. Vigne	NPC	pvigne@npc.gov.na
23. Sunny Shuuya	MRLGHRD	ikango@yahoo.com
24. Nico Willemse	BCLME	nicow@versa-con.com
25. Martha Mwandingi	UNDP Namibia: Head of Environmental Projects	martha.mwandingi@undp.org
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28. Beau Tjizoo	MFMR	btjizoo@mfmr.gov.na
29. Jo Tagg	ICEMA Project Coordinator	jotagg@mweb.com.na
30. Konrad Uebelhör	GTZ: Head of Biodiversity and Sustainable Land Management Project	Konrad.uebelhoer@gtz.de

APPENDIX III: Implementation of the Global Strategy for Plant Conservation (GSPC) and the Programme of Work on Protected Areas (PoW PA)

A: Global Strategy for Plant Conservation (GSPC) (✓= fully achieved ➲=partly achieved ✗=not achieved)

GSPC Target	National Targets	Progress since NR3 (2005)	Overall assessment
Target 1. A widely accessible working list of known plant species, as a step towards a complete world flora.	**NBSAP 3.4c:** A concerted national programme of inventory work is in place by 2004.	• 7% of all plant species in Namibia have been collected through the NPGRC • A national herbarium is insitutionalised within the NBRI-MAWT and a species list of indigenous plants exists that is continuously being updated • National Forest Inventory Project is ongoing and inventories of community forests are required before they can be gazzetted • Identified needs for improved *ex situ* management include an increased staff structure at the NPGRC, human resources development, a focused approach towards identification of gaps in the national collection, filling these through targeted collecting, an improved documentation system, completion of characterisation of existing accessions	➲
Target 2. A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels.	**NBSAP 1.4a:** Peer-reviewed red data lists for all major animal and plant taxa by 2005. **NBSAP 1.4b:** Peer-reviewed draft management or recovery plans available and implementation underway for top 10% priority species in these taxa by 2004; top 50% priority species by 2006. **NBSAP 1.5b:** 50% of germplasm of use to Namibia local landraces and indigenous wild species are characterised by 2005.	• Preliminary conservation status assessments (IUCN system) completed for about 32% of indigenous Namibian species and published in 2005 • No management plans are in place for priority species • National germplasm collection houses 3600 accessions of which 1822 are of crop species and 1778 of indigenous plants.	➲
Target 3. Development of models with protocols for plant conservation and sustainable use, based on research and practical experience.	**None in NR3**	• Experiments on sites that were to be mined have carried out, whereby seeds were collected and stored, re-seeded and reestablished in the area • Nurseries for indigenous plants have been successfully established in selected conservancies in the north-west Kunene region through ICEMA and th e CPP programme	➲
Target 4. At least ten percent of each of the world's	**NBSAP 1.1a:** Completed fine-scale prioritisation of terrestrial biodiversity	• Approximately 40% of Namibia now under the protected area network (17% covered by state-	✓

GSPC Target	National Targets	Progress since NR3 (2005)	Overall assessment
ecological regions effectively conserved.	areas by 2003 and of freshwater and marine areas by 2004. **NBSAP 1.1e:** Provisional target (to be modified through systematic area-prioritization): At least 15% representation of all vegetation types, and 30% of the globally-valuable Sperrgebiet (Succulent Karoo) and Namib Escarpment, in the PA network by 2006. **Vision 2030 Chapter 5.2.6:** Extended and a well managed protected area network to include biodiversity hotspots and transboundary areas.	protected areas) • Over 22% of all Namibia's biomes are under some form of conservation management (see table 5) • 16 of Namibia's 29 vegetation zones have over 10% of their area under some form of conservation management (see table 6) • 90.5% of the Succulent Karoo "biodiversity hotspot" now protected, compared to 11% in 2005 (see table 5) • 22% of Nama Karoo, and 92.5% of Namib Desert biomes (containing Namibia's other hotspot "The Great Western Escarpment") now under some form of conservation management (see table 5)	
Target 5. Protection of fifty percent of the most important areas for plant diversity assured.	See GSPC Target 4 above.	• Preliminary analysis of Important Plant Areas (IPAs) in Namibia carried out with 40 areas spread across the country identified as preliminary IPAs • Preliminary IPAs are being compared with data from the National Herbarium Specimen Database and the Vegetation Mapping section of the NBRI to determine a final list of IPAs • Many IPAs occur within state-protected areas in Namibia	➲
Target 6. At least thirty percent of production lands managed consistent with the conservation of plant diversity.	**None in NR3; however incorporated in various country policies, programmes and projects**	• Communal conservancies, freehold management units, concessions and community forests cover 23.4% of Namibia	➲
Target 7. Sixty percent of the world's threatened species conserved *In-situ*.	**NBSAP 1.4a:** Peer-reviewed red data lists for all major animal and plant taxa by 2005. **NBSAP 1.4b:** Peer-reviewed draft management or recovery plans available and implementation underway for top 10% priority species in these (priority taxa: endemic & threatened species).	• IUCN red listing criteria were applied to 1275 of close to 4000 indigenous plant species and a red data book produced • No management plans in place for plant species though the NBRI has been involved some ecosystem rehabilitation and restoration • Guidelines for the sustainable harvesting of devil's claw and a new revised policy has been improved to support this • Challenges include the lack of resources and unsustainable monitoring needs, as well as a lack of knowledge in areas such as breeding biology, distribution, population biology, and habitat	➲

GSPC Target	National Targets	Progress since NR3 (2005)	Overall assessment
		preference for indigenous Namibian plant species	
Target 8. Sixty percent of threatened plant species in accessible *Ex-situ* collections, preferably in the country of origin, and 10 percent of them included in recovery and restoration programmes.	**No specific target in NR3 but related to:** **NBSAP 1.4b:** Peer-reviewed draft management or recovery plans available and implementation underway for top 10% priority species in these taxa by 2004 and the top 50% priority species by 2006. MSBP: Ex situ conservation of seeds with focus on threatened, rare and endemic species.	• 7% of all plant species in Namibia have been collected • It is hoped that this can be extended to 25% over the next 10 years with renewed support from the MSBP	➲
Target 9. Seventy percent of the genetic diversity of crops and other major socio-economically valuable plant species conserved, and associated indigenous and local knowledge maintained.	**No specific target in NR3 but related to:** **NBSAP 1.5b:** 50% of germplasm of use to Namibia local landraces and indigenous wild species are characterised by 2005. **NBSAP 2.3b:** Full national inventories of livestock and crop genetic resources by 2001 and 2005 respectively. **NBSAP 2.4a:** Indigenous resource management principles are integrated into mainstream management practices at all levels by 2003. A National Forum on Traditional Knowledge is established by 2002. **NBSAP 9.4a:** The Access to Genetic Resources and Related Traditional Knowledge Bill is enacted, and awareness workshops on its provisions are held in all regions, by June 2003. **NBSAP 9.4b:** Existing customary codes of ethical conduct are identified and appropriate models of conduct for research, access to knowledge, and information management on indigenous knowledge systems are developed by 2005.	• National germplasm collection houses 3600 accessions of which 1822 are of crop species and 1778 of indigenous plants. • Project underway to document farmer's crop conservation practices in Oshana Region • Interim Bioprospecting Committee set up in 2007 until the Access to Genetic Resources and Related Traditional Knowledge Bill is promulgated • First ABS agreement for solely Namibian resource harvesters signed in 2010 between the Kunene Commiphora Conservancies Association and Afriplex Ltd. (South Africa) for *Commiphora wildii*. This agreement commits both parties to the sustainable use of the resource • Planned Grazing through herding (see case study) is an example of an approach building on local and indigenous practices (nomadic grazing) to support sustainable livelihoods, while easing pressure on perennial grasses	➲
Target 10. Management plans in place for at least 100 major alien species that threaten	**No specific target in NR3 but related to:** ***NBSAP 3.8a:*** *Detailed country study*	• Namibia's most important plant and animal invasive species have been identified • MAWF's programme to biologically control the	✗

GSPC Target	National Targets	Progress since NR3 (2005)	Overall assessment
plants, plant communities and associated habitats and ecosystems.	*on invasive alien species in Namibia, including prioritised lists of problem plants, insects, mammals and other taxa, is published by 2003.* **NBSAP 3.8b:** A comprehensive database framework with existing data is established by 2002, with at least 1500 new atlas records per year from across the country until 2008. **NBSAP 3.8c:** Target: Research recommendations on control of the top 50% priority plant, insect and mammal species are taken up by implementing agencies by 2008. **NBSAP 3.8d:** Targets: Namibian policies and regulations are strengthened and harmonised with other SADC countries by 2006; Namibian phytosanitary, extension and customs units are fully equipped to control invasives by 2007. **NBSAP 3.8e:** Targets: The publication of yearly "Update" briefing sheets and display materials including school competitions is established by 2002. Effective annual courses are designed and offered to priority target audiences starting in 2005. **NBSAP 3.8f:** Target: Pilot experimental control projects for top-priority invasive alien species are established by 2004. **NBSAP 3.8g:** Target: A national overview map indicating areas threatened by pollution of different kinds is available to decision-makers and planners by 2004.	aquatic weed *Salvinia molesta* is ongoing • Planting of *Prosopis spp*. banned in Windhoek area • Many bush encroachment clearing programmes underway through the directorate of forestry, NGOs and commercial farmers (see section 2.3.3.4) • A national phytosanitary committee on food safety was established in 2009 • Capacity and resources constraints to control the pathways for major potential alien invasive species is a challenge	

GSPC Target	National Targets	Progress since NR3 (2005)	Overall assessment
Target 11. No species of wild flora endangered by international trade.	**No specific target in NR3 but related to:** Namibia is signatory to CITES.	• Illegal pachycaul trade is threatening a number of species • Inadequate controls is a challenge	✗
Target 12. Thirty percent of plant-based products derived from sources that are sustainably managed.	**No specific target in NR3 but related to:** Various targets of the NBSAP 2001-2010. Overall aim of NBSAP is sustainable use, specifically targets formulated under chapter "themes": (2) Sustainable use of natural resources; (4) Sustainable land management; (5) Sustainable wetlands management; and (6) Sustainable coastal and marine management.	• Revised devil's claw policy approved by Cabinet in 2010 focusing on sustainable use • Guidelines for the sustainable harvesting of devil's claw produced and training facilitated for communities • Launch of the Namibia Organic Association in 2009 • Sustainable use of indigenous plant resources continues to be supported through the efforts of the IPTT	➲
Target 13. The decline of plant resources, and associated indigenous and local knowledge, innovations and practices that support sustainable livelihoods, local food security and health care, halted.	**No specific target in NR3 but related to:** **NBSAP 9.4a:** The Access to Genetic Resources and Related Traditional Knowledge Bill is enacted, and awareness workshops on its provisions are held in all regions, by June 2003. **NBSAP 2.4b:** Code of conduct and registration system for traditional healers is in place by 2003. Traditional medicine and medical practitioners are integrated within the national health system by 2004. **NBSAP 2.4a:** Indigenous resource management principles are integrated into mainstream management practices at all levels by 2003. A National Forum on Traditional Knowledge is established by 2002.	• Interim Bioprospecting Committee set up in 2007 until the Access to Genetic Resources and Related Traditional Knowledge Bill is promulgated • First ABS agreement for solely Namibian resource harvesters signed in 2010 between the Kunene Commiphora Conservancies Association and Afriplex Ltd. (South Africa) for *Commiphora wildii* • Planned Grazing through herding (see case study) is an example of an approach building on local and indigenous practices (nomadic grazing) to support sustainable livelihoods • Indigenous plant products such as devil's claw are being used mainly in Germany as a treatment for rheumatism and arthritis • Project underway to document farmer's crop conservation practices in Oshana Region • Greater investment is needed in the area of mainstreaming traditional knowledge into the health sector and wider economy	✓
Target 14. The importance of plant diversity and the need for its conservation incorporated into communication, educational and public-awareness programmes.	**No specific target in NR3 but related to:** **NBSAP 9.1a:** Awareness and education co-ordination activities are outsourced by September 2002; a detailed and creative awareness strategy is developed by December 2002; and first visible outputs are produced by June	• Annual "tree of the year" campaign has been developed through the directorate of forestry with different species selected every year and information posters and pamphlets delivered to schools • Tree Atlas published in 2005 showing the distribution and estimated abundance of over 400 species of woody plants in Namibia. A "Field Guide to Namibia's	✓

GSPC Target	National Targets	Progress since NR3 (2005)	Overall assessment
	2003. **NBSAP 9.1c:** Impacts of industry, producers and users on biological resources and mitigation measures to address potential impacts are identified by 2004 and publicised in consultation with these and other stakeholders by December 2004. **NBSAP 9.1d:** Measures to institutionalise awareness creation of decision makers regarding biodiversity, sustainable use, conservation and management, such as "Update" briefings, roundtables and visits are identified by December 2003. **NBSAP 9.2a:** The effectiveness of target-specific approaches for creating awareness of biodiversity issues are tested and new approaches identified and developed for different groups by 2004. **NBSAP 9.2b:** The UNAM-Humboldt University Biodiversity Management and Research Masters Programme is established and fully functional by 2005. **NBSAP 9.4a:** The Access to Genetic Resources and Related Traditional Knowledge Bill is enacted, and awareness workshops on its provisions are held in all regions, by June 2003. **Vision 2030 Chapter 4.2:** Adequate scientific data information including environmental for development planning and programme management.	Trees and Shrubs" was published in 2010 • Booklet on indigenous plant products produced and distributed in 2009 • Celebrations for national arbor day are carried out annually by the directorate of forestry • Seedlings are provided to schools on request and assistance is provided to establishing orchards in schools • Masters Programme in Biodiversity Management is fully operational and research into sustainable land management is being supported by the CPP's Young Professional Research Associates programme • Environmental Management Plans are a requirement of the Environmental Management Act (2007) to limit the day-to-day impacts of private businesses and mines on the environment • Biodiversity action day was held at the Brandberg (richly diverse mountain ecosystem) in 2010 where a diverse range of stakeholders learnt about the importance of biodiversity through practical demonstrations and fieldwork • No formal public awareness programme associated with Namibia's national plant genetic resources programme	
Target 15. The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this Strategy.	All of chapter 9 of the NBSAP focuses on "capacity building". A full suite of targets are formulated. Namibia recently completed its NCSA. The NCSA Action Plan formulates capacity building priorities in Namibia. A Biodiversity Professional Training Framework was commissioned by MET and finalised in 2004.	• NPGRC staff receive training through the MAWF and the SPGRC with training needs regularly assessed and submitted to the directorate of training within MAWF • A lack of appropriately qualified and experienced specialists to provide training has been identified as a challenge, as is the inadequate coverage of PGRFA issues in curricula of education institutions	➲

GSPC Target	National Targets	Progress since NR3 (2005)	Overall assessment
	Vision 2030 Chapter 4.2: Adequate capacity exist for training and research in science, technology as well as social and economic and environmental issues in Namibia.	• The SPGRC, FAO and Biodiversity International continue to alert the national programme to education and training opportunities outside Namibia though lack of funding can be a problem for uptake • A lack of appropriately qualified and experienced specialists to provide training has been identified as a challenge, as is the inadequate coverage of PGRFA issues in curricula of education institutions •	
Target 16. Networks for plant conservation activities established or strengthened at national, regional and international levels.	All of chapter 8 of the NBSAP focuses on "Namibia's role in the larger world community" highlighting the importance of international collaboration.	• Namibia is a member and contributes to the SADC Plant Genetic Resources Centre (SPGRC) network. Financial contributions, expertise, information and germplasm are provided by Namibia to the network. Support from the SPGRC depends on needs identified by the national programme • The MSBP has benefited the national programme mainly by increasing collection of seed of indigenous species and associated data and herbarium vouchers	✓

B. Programme of Work for Protected Areas (✓= fully achieved ➲=partly achieved ✗=not achieved)

PoW PA Goals and Targets and Suggested National Actions	Namibian Progress on PoW PA implementation *(no specific targets have been developed to date, however the NBSAP, which was drafted prior to the adoption of the PoW PA contains some relevant targets)*	Overall assessment
Goal 1.1: To establish and strengthen national and regional systems of protected areas integrated into a global network as a contribution to globally agreed goals		
Target: *By 2010, terrestrially1 / and 2012 in the marine area, a global network of comprehensive, representative and effectively managed national and regional protected area system is established as a contribution to (i) the goal of the Strategic Plan of the Convention and the World Summit on Sustainable Development of achieving a significant reduction in the rate of biodiversity loss by 2010; (ii) the Millennium Development Goals - particularly goal 7 on ensuring environmental sustainability; and (iii) the Global Strategy for Plant Conservation.*		
1.1.1 By 2006, establish suitable time-bound and	• Targets and indicators developed for required levels of protected area	➲

measurable national and regional level protected area targets and indicators.	coverage by vegetation type	
1.1.2 As a matter of urgency, by 2006, take action to establish or expand protected areas in any large, intact or relatively unfragmented or highly irreplaceable natural areas, or areas under high threat, as well as areas securing the most threatened species in the context of national priorities and taking into consideration the conservation needs of migratory species.	• Proclamation of the Sperrgebiet in 2008 has placed 90.5% of the "globall biodiversity hotspot" Succulent Karoo biome in Namibia under protection compared to 11% prior to the proclamation • The expansion of communal conservancies in the Kunene and Erongo regions has placed a considerable amount of Namibia's other global biodiversity hotspot, the Namib escarpment, under conservation • The Bwabwata and Mangetti National Parks were proclaimed in 2007 and 2008. Both parks are characterized by Kalahari woodland and scrub vegetation, which are listed as conservation priorities by the IUCN. • The upgrading of the National West Coast Recreation Area to National Park status (Dorob National Park) took place in 2010, meaning Namibia's entire biodiversity-rich coastal zone is now under the highest form of conservation protection	✓
1.1.3 As a matter of urgency, by 2006 terrestrially and by 2008 in the marine environment, take action to address the under-representation of marine and inland water ecosystems in existing national and regional systems of protected areas, taking into account marine ecosystems beyond areas of national jurisdiction in accordance with applicable international law, and transboundary inland water ecosystems.	• Namibia's first marine protected area was proclaimed in 2009 covering an area of 12,000km^2 • A final draft treaty was produced for the establishment of the Kavango Zambezi TBPA in 2009, which will include significant proportions of the Okavango, Kwando and Zambezi river basins under protection	➲
1.1.4 By 2006, conduct, with the full and effective participation of indigenous and local communities and relevant stakeholders, national-level reviews of existing and potential forms of conservation, and their suitability for achieving biodiversity conservation goals, including innovative types of governance for protected areas that need to be recognized and promoted through legal, policy, financial institutional and community mechanisms, such as protected areas run by Government agencies at various levels, comanaged protected areas, private protected areas, indigenous and local community conserved areas.	• Based on a treaty signed in 2003, Namibian and South African authorities are co-managing the Ai-/Ais Richtersveld TBPA. Joint initiatives in areas such as tourism, law enforcement and biodiversity management. Technical working groups for water resources, conservation, safety and security as well as finance have been set up and are operational • The collaborative management forum of the Mudumu North Complex offers an innovative governance approach aimed at improved biodiversity conservation. The multi-stakeholder forum collaborates on issues relating to wildlife and natural resource management including human wildlife conflict; law enforcement; fire management; community awareness; reintroduction of wildlife species; and land use zonation (see section 2.3.1.5) • The Kunene National Park is currently under negotiation aimed at linking Etosha National Park to the Skeleton Coast National Park through a network of private concessions and communal conservancies. Communities are playing an active role in the negotiating process.	✓
1.1.5 By 2006 complete protected area system gap analyses at national and regional levels based on the requirements for representative systems of protected areas that adequately conserve terrestrial, marine and inland water biodiversity and ecosystems. National plans should also be developed to provide interim	• Namibia has pursued its CBNRM programme effectively to protect highly threatened and highly valued areas such as "The Great Western Escarpment" biodiversity hotspot • Transboundary diagnostic analyses completed for the Okavango and Orange River Basins • Benguela Current Large Marine Ecosystem Project has entered its second	✓

measures to protect highly threatened or highly valued areas wherever this is necessary. Gap analyses should take into account Annex I of the Convention on Biological Diversity and other relevant criteria such as irreplaceability of target biodiversity components, minimum effective size and viability requirements, species migration requirements, integrity, ecological processes and ecosystem services.	phase of operations	
1.1.6 By 2009, designate the protected areas as identified through the national or regional gap analysis (including precise maps) and complete by 2010 terrestrially and 2012 in the marine environments the establishment of comprehensive and ecologically representative national and regional systems of protected areas.	• Namibia's protected area network has been boosted by the proclamation of the Bwabwata National Park in 2007, Sperrgebiet and Manketti National Parks in 2008, and the first Marine Protected Area in 2009. The proclamation of Dorob National Park in 2010 also now means the entire coastal zone is under national park status	✓
1.1.7 Encourage the establishment of protected areas that benefit indigenous and local communities, including by respecting, preserving, and maintaining their traditional knowledge in accordance with article 8(j) and related provisions.	• The MET's policy of tourism and wildlife concessions on state land since 2007 is emerging as a useful means of involving previously disadvantaged Namibians in high value/low impact nature-based tourism	✓
Goal 1.2: To integrate protected areas into broader land- and seascapes and sectors so as to maintain ecological structure and function		
Target: *By 2015, all protected areas and protected area systems are integrated into the wider land- and seascape, and relevant sectors, by applying the ecosystem approach and taking into account ecological connectivity 3/ and the concept, where appropriate, of ecological networks.*		
1.2.1. Evaluate by 2006 national and sub-national experiences and lessons learned on specific efforts to integrate protected areas into broader land- and seascapes and sectoral plans and strategies such as poverty reduction strategies.	• Management effectiveness of Namibia's protected areas was assessed in 2004 and 2009, including the areas of economic benefit assessments of protected areas to local communities, and the effectiveness of protected area work and management plans	➲
1.2.2. Identify and implement, by 2008, practical steps for improving the integration of protected areas into broader land- and seascapes, including policy, legal, planning and other measures.	• Project proposal "Namibia: Protected Landscape Conservation Areas Initiative (NAMPLACE)" has been submitted to the GEF aiming at the establishment of Protected Landscape Conservation Areas and to ensure that land uses in areas adjacent to existing protected areas are compatible with biodiversity conservation objectives, and to establish corridors to sustain the viability of wildlife populations • Draft national policy on protected areas, neighbours and resident community, which aims to improve conservation of Namibia's protected areas, to provide greater social equity in the distribution of benefits from protected areas and to stimulate local and regional economies	✓
1.2.3. Integrate regional, national and sub-national systems of protected areas into broader land- and seascape, *inter alia* by establishing and managing ecological networks, ecological corridors and/or buffer zones, where appropriate, to maintain ecological	• Collaborative management systems are already in place in a number of areas (see section 2.3.1.5) • Caprivi region is a priority focus area given its species-abundance and the movement of wildlife across international borders in the region. The KAZA TBPA will have a major role to play in this regard	✓

processes and also taking into account the needs of migratory species.	• See NAMPLACE project also (Goal 1.2.2 above)	
1.2.4. Develop tools of ecological connectivity, such as ecological corridors, linking together protected areas where necessary or beneficial as determined by national priorities for the conservation of biodiversity.	• 42 communal conservancies located immediately adjacent to protected areas or in the corridors between them. This has created opportunities for ecological and economical linkages between the respective conservancies and state protected areas such as Etosha, Khaudum, Bwabwata, Mudumu and Mamili National Parks. Concessions also border the Etosha, Namib Naukluft and Ai-/Ais parks. Collaborative management approaches are an example of a tool to better link these areas • See NAMPLACE project also (Goal 1.2.2 above)	✓
1.2.5.Rehabilitate and restore habitats and degraded ecosystems, as appropriate, as a contribution to building ecological networks, ecological corridors and/or buffer zones.	• Restoration and rehabilitation initiatives have been carried out in the Sperrgebiet and Namib Naukluft Parks	➲
Goal 1.3: To establish and strengthen regional networks, transboundary protected areas (TBPAs) and collaboration between neighbouring protected areas across national boundaries		
Target: *Establish and strengthen by 2010/20125 / transboundary protected areas, other forms of collaboration between neighbouring protected areas across national boundaries and regional networks, to enhance the conservation and sustainable use of biological diversity, implementing the ecosystem approach, and improving international cooperation.*		
1.3.1 Collaborate with other parties and relevant partners to establish effective regional networks of protected areas, particularly in areas identified as common conservation priorities (e.g. barrier reef systems, large scale river basins, mountain systems, large remaining forest areas and critical habitat for endangered species), and establish multi-country coordination mechanisms as appropriate to support the establishment and effective long term management of such networks.	• A final draft treaty was produced for the establishment of the Kavango Zambezi TBPA in 2009, which cover an area of 287,132km^2 and incorporating 36 national parks, game reserves, community conservancies and game management areas. The countries involved are Angola, Botswana, Namibia, Zambia and Zimbabwe. • Jointly managed networks have been set up for the Ai-/Ais Richtersveld TBPA.	✓
1.3.2 Collaborate with other Parties and relevant partners through the United Nations Informal Consultative Process on the Law of the Sea (UNICPOLOS) to establish and manage protected areas in marine areas beyond the limits of national jurisdiction, in accordance with international law, including the UN Convention on the Law of the Sea, and based on scientific information.	• BCLME project, involving Namibia, Angola and South Africa, focues on the management of shared fish stocks, the assessment and monitoring of the physical environment, establishment of an ecosystem information system, and the cooperative management of biodiversity and ecosystem health	➲
1.3.3 Establish, where appropriate, new TBPAs with adjacent Parties and countries and strengthen effective collaborative management of existing TBPAs.	• See goal 1.3.1 above • Namibia is also attempting to form a TBPA linking the Skeleton Coast National Park in north-western Namibia with the Iona National Park in south-eastern Angola	✓
1.3.4 Promote collaboration between protected areas across national boundaries.	• See goals 1.3.1 and 1.3.3 above	✓

Goal 1.4: To substantially improve site-based protected area planning and management		
Target: *All protected areas to have effective management in existence by 2012, using participatory and science-based site planning processes that incorporate clear biodiversity objectives, targets, management strategies and monitoring programmes, drawing upon existing methodologies and a long-term management plan with active stakeholder involvement.*		
1.4.1 Create a highly participatory process, involving indigenous and local communities and relevant stakeholders, as part of site-based planning in accordance with the ecosystem approach, and use relevant ecological and socio-economic data required to develop effective planning processes.	• The Kunene National Park is currently under negotiation aimed at linking Etosha National Park to the Skeleton Coast National Park through a network of private concessions and communal conservancies. Communities are playing an active role in the negotiating process • Communities are actively engaged in collaborative management initiatives through the platform of communal conservancies and community forests	✓
1.4.2 Identify appropriate measurable biodiversity conservation targets for sites, drawing on criteria laid out in Annex I to the Convention on Biological Diversity and other relevant criteria.	• A system of biodiversity indicators is being developed through which biodiversity conservation targets may be set and monitored	➲
1.4.3 Include in the site-planning process an analysis of opportunities for the protected area to contribute to conservation and sustainable use of biodiversity at local and regional scales as well as an analysis of threats and means of addressing them.	• These measures are included in target areas of the SPAN and NAMPLACE (proposed) project documents. Target Areas: Ai-/Ais Hot Springs Game Park; Bwabwata-Mudumu-Mamili Complex; Etosha/Skeleton Coast Link; Sperrgebiet (all SPAN); Mudumu Landscape; Greater Waterberg Landscape; Greater Sossusvlei/Namib landscape; Greater Fish River Landscape; Windhoek Greenbelt Landscape (all NAMPLACE)	✓
1.4.4 As appropriate, but no later than 2010, develop or update management plans for protected areas, built on the above process, to better achieve the three objectives of the Convention	• Management plans are in place for all of Namibia's coastal national parks, north-eastern national parks and Etosha • Need to integrate these management plans with regional development plans and strategies has been recognized	✓
1.4.5 Integrate climate change adaptation measures in protected area planning, management strategies, and in the design of protected area systems.	• Climate change implementation action plan included in the proposed project document of NAMPLACE • Study on Climate Change Vulnerability and Adaptation Assessment for Namibia's Biodiversity and Protected Area System completed in 2010	✓
1.4.6 Ensure that protected areas are effectively managed or supervised through staff that are well-trained and skilled, properly and appropriately equipped, and supported, to carry out their fundamental role in the management and conservation of protected areas.	• Management effectiveness assessment system is in place • Increased infrastructural investments into protected areas are being faciltitated by MET in partnership with external agencies such as KfW and MCA • Staff training being facilitated by MET with assistance from external agencies such as InWENT • The need for improved monitoring and research capacities has been identified	✓
Goal 1.5: To prevent and mitigate the negative impacts of key threats to protected areas		
Target: *By 2008, effective mechanisms for identifying and preventing, and/or mitigating the negative impacts of key threats to protected areas are in place.*		
1.5.1 Apply, as appropriate, timely environmental impact assessments to any plan or project with the potential to have effects on protected areas, and ensure timely information flow among all concerned parties to that end, taking into account decision VI/7 A of the	• Environmental Impact Assessment being conducted (2010) on the MCA's plan to upgrade the infrastructure of Etosha National Park	✓

Conference of the Parties on guidelines for incorporating biodiversity related issues into environmental impact assessment legislation and/or processes and in strategic environmental assessments.		
1.5.2 Develop by 2010 national approaches to liability and redress measures, incorporating the polluter pays principle or other appropriate mechanisms in relation to damages to protected areas.	• Polluter pays principle is applied in Namibia through the provisions of the Environmental Management Act of 2007	✓
1.5.3 Establish and implement measures for the rehabilitation and restoration of the ecological integrity of protected areas.	• Restoration and rehabilitation initiatives have been carried out in the Sperrgebiet and Namib Naukluft Parks	➲
1.5.4 Take measures to control risks associated with invasive alien species in protected areas.	• Measures to control risks associated with alien invasive species are outlined in the draft Protected Areas and Wildlife Management Bill 2010	➲
1.5.5 Assess key threats to protected areas and develop and implement strategies to prevent and/or mitigate such threats.	• Key threats to biodiversity pertaining to protected areas have been identified and are being addressed through the implementation of protected area specific management plans and national legislation. • Major threats identified: negative visitor impacts on fragile ecosystems; small size and isolation of some protected areas; poaching of animals; alien species invasion; uncontrolled bush fires; uncontrolled mining and prospecting activities; illegal harvesting of plants; over-abstraction of water	✓
1.5.6 Develop policies, improve governance, and ensure enforcement of urgent measures that can halt the illegal exploitation of resources from protected areas, and strengthen international and regional cooperation to eliminate illegal trade in such resources taking into account sustainable customary resource use of indigenous and local communities in accordance with article 10(c) of the Convention.	• Draft Policy on Mining and Prospecting in Protected areas • Draft Protected Areas and Wildlife Management and Protected Areas Bill • MET conducted training of custom officers on how to verify export and CITES permits in 2009	➲
Goal 2.1: To promote equity and benefit-sharing		
Target: *Establish by 2008 mechanisms for the equitable sharing of both costs and benefits arising from the establishment and management of protected areas.*		
2.1.1. Assess the economic and socio-cultural costs, benefits and impacts arising from the establishment and maintenance of protected areas, particularly for indigenous and local communities, and adjust policies to avoid and mitigate negative impacts, and where appropriate compensate costs and equitably share benefits in accordance with the national legislation.	• Study completed on "The Economic Value of Namibia's Protected Area System" in 2010 • Study completed on a "Sustainble Financing Plan for Namibia's Protected Area System" • Recommendations and options explored in these studies are currently being considered	➲
2.1.2. Recognize and promote a broad set of protected area governance types related to their potential for achieving biodiversity conservation goals in accordance with the Convention, which may include areas conserved by indigenous and local communities and	• State-protected areas, communal conservancies, freehold management units, concessions, community forests and marine protected areas are all recognized and promoted to promote biodiversity conservation in Namibia and to form an integrated protected area network	✓

private nature reserves. The promotion of these areas should be by legal and/or policy, financial and community mechanisms.		
2.1.3. Establish policies and institutional mechanisms with full participation of indigenous and local communities, to facilitate the legal recognition and effective management of indigenous and local community conserved areas in a manner consistent with the goals of conserving both biodiversity and the knowledge, innovations and practices of indigenous and local communities.	• Namibia has devolved considerable rights over natural resources through its CBNRM programme and associated policy framework. Rights over wildlife, water and forest resources are granted based on their sustainable use by communities. Communities have been able to benefit from the incentives offered by this approach.	✓
2.1.4. Use social and economic benefits generated by protected areas for poverty reduction, consistent with protected-area management objectives.	• Tourism concessions policy (2007) is generating social and economic benefits for local communities through employment, income generation and skills development. Indirect benefits for communities include an increased market for crafts and natural resource products,	✓
2.1.5. Engage indigenous and local communities and relevant stakeholders in participatory planning and governance, recalling the principles of the ecosystem approach.	• Communities are actively engaged in collaborative management initiatives through the platform of communal conservancies and community forests • Communities develop their own management and benefit and distribution plans for conservancies and community forests • Communities are playing an active role in the negotiating and planning process for the Kunene National Park • NAMPLACE project includes a public involvement plan	✓
2.1.6. Establish or strengthen national policies to deal with access to genetic resources within protected areas and fair and equitable sharing of benefits arising from their utilization, drawing upon the Bonn Guidelines on Access to Genetic Resources and Fair and Equitable Sharing of the Benefits Arising out of their Utilization as appropriate.	• Interim Bioprospecting Committee established in 2007 until Namibia's draft Access to Genetic Resources and Associated Traditional Knowledge Bill is finalized	➲
Goal 2.2: To enhance and secure involvement of indigenous and local communities and relevant stakeholders		
Target: *Full and effective participation by 2008, of indigenous and local communities, in full respect of their rights and recognition of their responsibilities, consistent with national law and applicable international obligations, and the participation of relevant stakeholders, in the management of existing, and the establishment and management of new, protected areas.*		
2.2.1. Carry out participatory national reviews of the status, needs and context-specific mechanisms for involving stakeholders, ensuring gender and social equity, in protected areas policy and management, at the level of national policy, protected area systems and individual sites.	• National Capacity Self-Assessment has been carried out and is being built on by the CEGEM Project, which aims to enhance Namibia's capacity to implement the Global Environmental Conventions • Community level capacity to successfully manage ecosystems is needed, as is the capacity of supporting organizations given the rapid expansion in communal conservancies and community forests	➲
2.2.2 Implement specific plans and initiatives to effectively involve indigenous and local communities, with	• Draft national policy on protected areas, neighbours and resident community, which aims to improve conservation of Namibia's protected areas, to provide greater social equity in the distribution of benefits from protected areas and to	✓

respect for their rights consistent with national legislation and applicable international obligations, and stakeholders at all levels of protected areas planning, establishment, governance and management, with particular emphasis on identifying and removing barriers preventing adequate participation.	stimulate local and regional economies • Communities are actively engaged in collaborative management initiatives through the platform of communal conservancies and community forests • Communities develop their own management and benefit and distribution plans for conservancies and community forests • Communities are playing an active role in the negotiating and planning process for the Kunene National Park • NAMPLACE project includes a public involvement plan	
2.2.3 Support participatory assessment exercises among stakeholders to identify and harness the wealth of knowledge, skills, resources and institutions of importance for conservation that are available in society.		
2.2.4 Promote an enabling environment (legislation, policies, capacities, and resources) for the involvement of indigenous and local communities and relevant stakeholders/ in decision making, and the development of their capacities and opportunities to establish and manage protected areas, including community-conserved and private protected areas.	• Namibia has devolved considerable rights over natural resources through its CBNRM programme and associated policy framework. Rights over wildlife, water and forest resources are granted based on their sustainable use by communities. Communities have been able to benefit from the incentives offered by this approach.	✓
2.2.5 Ensure that any resettlement of indigenous communities as a consequence of the establishment or management of protected areas will only take place with their prior informed consent that may be given according to national legislation and applicable international obligations.		
Goal 3.1: To provide an enabling policy, institutional and socio-economic environment for protected areas.		
Target: *By 2008 review and revise policies as appropriate, including use of social and economic valuation and incentives, to provide a supportive enabling environment for more effective establishment and management of protected areas and protected areas systems.*		
3.1.1 By 2006, identify legislative and institutional gaps and barriers that impede the effective establishment and management of protected areas, and by 2009, effectively address these gaps and barriers.	• The following gaps in the institutional and policy framework have been identified: A sufficient basis for the classification of parks; a standard approach towards management and development planning; monitoring regime for parks; a framework for the management of concessions concerning tourism, hunting and other services; a sustainable financing mechanism; adequate measures to prevent impacts from prospecting and mining; cooperative and harmonized management with adjacent land units; a system to address issues concerning resident communities and illegal settlements in protected areas • These have started to be addressed by newly drafted policies, improved management plans, development of a sustainable financing plan and the recently submitted NAMPLACE project proposal among others	➲
3.1.2 Conduct national-level assessments of the contributions of protected areas, considering as	• Targets for the coverage of protected network are included in the MDGs	➲

appropriate environmental services, to the country & apos;s economy and culture, and to the achievement of the Millennium Development Goals at the national level; and integrate the use of economic valuation and natural resource accounting tools into national planning processes in order to identify the hidden and non-hidden economic benefits provided by protected areas and who appropriates these benefits.	• Study highlighting the economic value (direct and indirect) of Namibia's Protected Area System published in 2010	
3.1.3 Harmonize sectoral policies and laws to ensure that they support the conservation and effective management of the protected area system.	• An integrated natural resources working group was set up in 2009 in an attempt to harmonize policies relating to natural resources management	➲
3.1.4 Consider governance principles, such as the rule of law, decentralization, participatory decisionmaking mechanisms for accountability and equitable dispute resolution institutions and procedures.	• The need to coordinate protected area management plans with regional development plans and strategies has been identified with a key role for devolved decision making to regional council and local levels • The involvement of traditional authorities in the management of protected areas is one factor considered in the NAMETT tool	➲
3.1.5 Identify and remove perverse incentives and inconsistencies in sectoral policies that increase pressure on protected areas, or take action to mitigate their perverse effects. Whenever feasible, redirect these to positive incentives for conservation.	• Draft policy on mining and prospecting in protected areas • Potential for biodiversity offsets to create positive incentives for conservation	➲
3.1.6 Identify and establish positive incentives that support the integrity and maintenance of protected areas and the involvement of indigenous and local communities and stakeholders in conservation.	• Namibia's CBNRM policy framework has created incentives for communities to sustainably use natural resources (initially wildlife, but now also plants and other non-timber forest products). Types of benefits accruing to communities include employment in areas such as tourism and resource monitoring, skills training in a variety of fields, and income generation through the development of smallscale local enterprises	✓
3.1.7 Adopt legal frameworks to national, regional and sub-national protected areas systems of countries where appropriate.	• Memoranda of understanding and treaties have been signed with neighbouring countries for the establishment of TBPAs	➲
3.1.8 Develop national incentive mechanisms and institutions and legislative frameworks to support the establishment of the full range of protected areas that achieve biodiversity conservation objectives including on private lands and private reserves where appropriate.	• Frameworks in place	✓
3.1.9 Identify and foster economic opportunities and markets at local, national and international levels for goods and services produced by protected areas and/or reliant on the ecosystem services that protected areas provide, consistent with protected area objectives and promote the equitable sharing of the benefits.	• This is being achieved largely through the platform of conservancies and community forests with support from institutions such as the IPTT (see section 2.3.2 for further information)	✓
3.1.10 Develop necessary mechanisms for institutions with responsibilities for conservation of biological	• Sustainable financing plan has been developed for Namibia's protected area system	➲

diversity at the regional, national and local level to achieve institutional and financial sustainability.	• Resources are needed to ensure the long-term sustainability of Namibia's CBNRM programme	
3.1.11 Cooperate with neighbouring countries to establish an enabling environment for transboundary protected areas and for neighbouring protected areas across national boundaries and other similar approaches including regional networks.	• Transboundary cooperation based on the SADC Protocol on Wildlife Conservation and Law Enforcement is excellent: Ai-/Ais Richtersveld TBPA, KAZA TBPA, and the Skeleton Coast/Iona National Park TBPA	✓
Goal 3.2: To build capacity for the planning, establishment and management of protected areas		
Target: By 2010, comprehensive capacity building programmes and initiatives are implemented to develop knowledge and skills at individual, community and institutional levels, and raise professional standards.		
3.2.1 By 2006 complete national protected-area capacity needs assessments, and establish capacity building programmes on the basis of these assessments including the creation of curricula, resources and programs for the sustained delivery of protected areas management training.	• Conservation needs assessment undertaken in 2004, based on which a training plan was developed by SPAN • A number of specialized training and capacity building courses to enhance PA management have been supported, including collaborative PA management, law enforcement, first aid rescue course, 4x4 off-road driving and basic vehicle maintenance, as well as development of strategic and park management plans.	➲
3.2.2 Establish effective mechanisms to document existing knowledge and experiences on protected area management, including traditional knowledge in accordance with Article 8 (j) and Related Provisions, and identify knowledge and skills gaps.	• Quarterly newsletter set up through the SPAN project with particular focus on protected areas. 10,000 copies are distributed free of charge to stakeholders around Namibia since 2005 • Park Talk - a regular bi-monthly evening presentation and discussion session forum - was launched in 2005. Meetings usually include a presentation from a selected individual or group on a selected topic, followed by a discussion session. • The SPAN project also runs ParkNet – an email based discussion forum where members can debate matters related to park management in Namibia	➲
3.2.3 Exchange lessons learnt, information and capacity-building experiences among countries and relevant organizations, through the Clearing-house Mechanisms and other means.	• SPAN has developed its own website www.span.org.na containing up-to-date information and publications • This information is also being integrated into a new MET website www.met.na	➲
3.2.4 Strengthen the capacities of institutions to establish cross-sectoral collaboration for protected area management at the regional, national and local levels.	• NACOMA is particularly supporting Regional Councils, Local Authorities and Local Municipalities in the coastal parks, while traditional authorities are being increasingly involved in protected area management discussions • Ongoing support being provided to conservancy and community forest management committees	➲
3.2.5 Improve the capacity of protected areas institutions to develop sustainable financing through fiscal incentives, environmental services, and other instruments.	• Sustainable financing plan produced for Namibia's Protected Area system • Incentive mechanisms to enhance park management developed and launched including the Park Innovation Grant aiming to recognize and promote innovations and creativity within park field staff and the MET field staff awards to recognize outstanding contributions from field-based staff	✓
Goal 3.3: To develop, apply and transfer appropriate technologies for protected areas		

Target: *By 2010 the development, validation, and transfer of appropriate technologies and innovative approaches for the effective management of protected areas is substantially improved, taking into account decisions of the Conference of the Parties on technology transfer and cooperation.*		
3.3.1 Document and make available to the Executive Secretary appropriate technologies for conservation and sustainable use of biological diversity of protected areas and management of protected areas.	• Inadequate infrastructure was identified as a major constraint in Namibia's conservation needs assessment. The MET with substantial support from a wide range of agencies has sought to rectify this with investment in staff housing, tourist offices, road maintenance, waterholes and fencing among others • Camera traps and collaring have also been widely used	➲
3.3.2 Assess needs for relevant technologies for protected area management involving indigenous and local communities and stakeholders such as the, research institutions, non-Governmental organizations and the private sector.	• Insufficient resources for GPS collars has been noted as an important constraint, particularly in efforts to monitor elephant movements as part of human wildlife conflict mitigation	➲
3.3.3 Encourage development and use of appropriate technology, including technologies of indigenous and local communities with their participation, approval and involvement in accordance with Article 8(j) and Related Provisions, for habitat rehabilitation and restoration, resource mapping, biological inventory, and rapid assessment of biodiversity, monitoring, *in situ* and *ex situ* conservation, sustainable use, etc.	• Restoration and rehabilitation projects have taken place mainly in the Sperrgebiet and Namibi-Naukluft National Parks through partnerships between the respective mining companies and the NBRI	➲
3.3.4 Promote an enabling environment for the transfer of technology in accordance with decision VII/29 of the Conference of Parties on technology transfer and cooperation to improve protected area management.	• Technology transfer is mainly provided to protected areas through the GEF-funded NACOMA and SPAN projects, while implementing agents of funding such as KfW and the MCA concentrate on infrastructure development along with MET	➲
3.3.5 Increase technology transfer and cooperation to improve protected area management.	• This is mostly likely to be achieved through new GEF-funded projects such as NAMPLACE and continued international assistance	➲
Goal 3.4: To ensure financial sustainability of protected areas and national and regional systems of protected areas		
Target: *By 2008, sufficient financial, technical and other resources to meet the costs to effectively implement and manage national and regional systems of protected areas are secured, including both from national and international sources, particularly to support the needs of developing countries and countries with economies in transition and small island developing States.*		
3.4.1 Conduct a national-level study by 2005 of the effectiveness in using existing financial resources and of financial needs related to the national system of protected areas and identify options for meeting these needs through a mixture of national and international resources and taking into account the whole range of possible funding instruments, such as public funding, debt for nature swaps, elimination of perverse incentives and subsidies, private funding, taxes and fees for ecological services .	• Preliminary study produced in 2004, and built on with another study in 2010	✓
3.4.2 By 2008, establish and begin to implement country-level sustainable financing plans that support national systems of protected areas, including	• Sustainable financing plan produced in 2010, recommendations currently being considered	➲

necessary regulatory, legislative, policy, institutional and other measures.		
3.4.3 Support and further develop international funding programmes to support implementation of national and regional systems of protected areas in developing countries and countries with economies in transition and small island developing States.	• International funding programmes are playing an important role in developing Namibia's national parks (most notably KfW and the Bwabwata, Mudumu and Mamili national parks; MCA with Etosha national park)	✓
3.4.4 Collaborate with other countries to develop and implement sustainable financing programmes for national and regional systems of protected areas.	• Joint management of the Ai-/Ais Richtersveld TBPA between Namibia and South Africa facilitated through a finance technical working group	➲
3.4.5 Provide regular information on protected areas financing to relevant institutions and mechanisms, including through future national reports under the Convention on Biological Diversity, and to the World Database on Protected Areas.	• This is being achieved	➲
3.4.6 Encourage integration of protected areas needs into national and, where applicable, regional development and financing strategies and development cooperation programmes.	• MET's development budget for infrastructure projects has shown big increases in recent years • The design of a new generation of IRLUPs is a good opportunity to properly integrate protected areas into regional development plans	➲
Goal 3.5: To strengthen communication, education and public awareness		
Target: By 2008 public awareness, understanding and appreciation of the importance and benefits of protected areas is significantly increased.		
3.5.1 Establish or strengthen strategies and programmes of education and public awareness on the importance of protected areas in terms of their role in biodiversity conservation and sustainable socioeconomic development, in close collaboration with the Communication, Education and Public Awareness Initiative (CEPA) under the Convention on Biological Diversity and targeted towards all stakeholders.	• Environmental education policy is being developed by the MET and Namibian Environmental Education Network (NEEN) established in 2010 • Environmental education centres in Etosha and Waterberg frequently host school groups to increase their awareness of protected areas and the wider environment	➲
3.5.2 Identify core themes for education, awareness and communication programmes relevant to protected areas, including inter alia their contribution to economy and culture to achieve specific end results such as compliance by resource users and other stakeholders or an increased understanding of science-based knowledge by indigenous and local communities and policy makers and an increased understanding of the needs, priorities and value of indigenous and local communities & apos; knowledge, innovations and practices by Governments, non-Governmental organizations and other relevant stakeholders.	• This process is underway through NEEN	➲
3.5.3 Strengthen, and where necessary, establish	• Quarterly newsletter, Park talks, celebration of environmental days and ad-	

information mechanisms directed at target groups such as the private sector, policy makers, development institutions, community-based organizations, the youth, the media, and the general public.	hoc media articles and appearances are the main information mechanisms used • Park brochures produced for all national parks for tourists and general public	
3.5.4 Develop mechanisms for constructive dialogue and exchange of information and experiences among protected-area managers, and between protected area managers and indigenous and local communities and their organizations and other environment educators and actors.	• A National CBNRM forum is under development and a workshop bringing together conservancies with support organizations and the private sector has taken place • Environmental education policy is being developed by the MET Environmental education centres in Etosha and Waterberg frequently host school groups to increase their awareness of protected areas and the wider environment	➲
3.5.5 Incorporate the subject of protected areas as an integral component of the school curricula as well as in informal education.	• Not yet incorporated comprehensively in curriculum but environmental education centres playing an important informal educative role	➲
3.5.6 Establish mechanism and evaluate the impacts of communication, education and public awareness programmes on biodiversity conservation to ensure that they improve public awareness, change behaviour and support the achievement of protected area objectives.		✗
Goal 4.1 - To develop and adopt minimum standards and best practices for national and regional protected area systems		
Target: *By 2008, standards, criteria, and best practices for planning, selecting, establishing, managing and governance of national and regional systems of protected areas are developed and adopted.*		
4.1.1 Collaborate with other Parties and relevant organizations, particularly IUCN, on the development, testing, review and promotion of voluntary protected areas standards and best practices on planning and management, governance and participation.		
4.1.2 Develop and implement an efficient, long-term monitoring system of the outcomes being achieved through protected area systems in relation to the goals and targets of this work programme.	• This is accounted for in the proposed project document of NAMPLACE and is the NAMETT tool is used for this purpose	✓
4.1.3 Draw upon monitoring results to adapt and improve protected area management based on the ecosystem approach.	• The NAMETT has been useful in identifying areas of weakness in need of improvement	➲
Goal 4.2: To evaluate and improve the effectiveness of protected areas management		
Target: *By 2010, frameworks for monitoring, evaluating and reporting protected areas management effectiveness at sites, national and regional systems, and transboundary protected area levels adopted and implemented by Parties.*		
4.2.1 Develop and adopt, by 2006, appropriate methods, standards, criteria and indicators for evaluating the effectiveness of protected area management and governance, and set up a related database, taking	• Namibia Management Effectiveness Tracking Tool (NAMETT) implemented in 15 terrestrial parks to assess their management effectiveness in 2004 • Booklet published tracking and monitoring progress between 2004 and 2009	➲

into account the IUCN-WCPA framework for evaluating management effectiveness, and other relevant methodologies, which should be adapted to local conditions.		
4.2.2 Implement management effectiveness evaluations of at least 30 percent of each Party & apos;s protected areas by 2010 and of national protected area systems and, as appropriate, ecological networks.	• 65% of Namibia's protected areas underwent management effectiveness evaluations in 2004 and 2009	✓
4.2.3 Include information resulting from evaluation of protected areas management effectiveness in national reports under the Convention on Biological Diversity.	• This has been achieved (see section 2.3.1.3)	✓
4.2.4 Implement key recommendations arising from site- and system-level management effectiveness evaluations, as an integral part of adaptive management strategies.	• Budgeting, the setting of management objectives, and law enforcement were identified as key problems in need of redress	➲
Goal 4.3: To assess and monitor protected area status and trends		
Target: *By 2008, sufficient financial, technical and other resources to meet the costs to effectively implement and manage national and regional systems of protected areas are secured, including both from national and international sources, particularly to support the needs of developing countries and countries with economies in transition and small island developing States.*		
4.3.1 Implement national and regional programmes to monitor and assess the status and trends of biodiversity within protected area systems and sites.	• Biodiversity indicators are currently under development to facilitate the monitoring of biodiversity trends	➲
4.3.2 Measure progress towards achieving protected area targets based on periodic monitoring and report on progress towards these targets in future national reports under the Convention on Biological Diversity as well as in a thematic report at COP-9.	• This was and will continue to be achieved	➲
4.3.3 Improve and update national and regional databases on protected areas and consolidate the World Database on Protected Areas as key support mechanisms in the assessment and monitoring of protected area status and trends.	• This is done regularly	✓
4.3.4 Participate in the World Database on Protected Areas maintained by UNEP-WCMC, and the United Nations List of Protected Areas and the State of the World Protected Areas assessment process.	• This is done	✓
4.3.5 Encourage the establishment and use of new technologies including geographic information system and remote sensing tools for monitoring protected areas.	• Remote sensing is increasingly being used to monitor threats such as forest fires (particularly in Etosha, Waterberg and the north-eastern parks)	➲
Goal 4.4: To ensure that scientific knowledge contributes to the establishment and effectiveness of protected areas and protected area Systems		
Target: *Scientific knowledge relevant to protected areas is further developed as a contribution to their establishment, effectiveness, and management.*		
4.4.1 Improve research, scientific and technical	• Namibia is a very active participant in the UNCBD, UNCCD, UNFCCC, CITES	✓

cooperation related to protected areas at national, regional and international levels.	and the Ramsar Convention and provides key scientific and technical contributions to each of these conventions • Regional cooperation is facilitated by the adoption of the SADC Protocol on Wildlife Conservation and Law Enforcement	
4.4.2 Promote interdisciplinary research, to improve understanding of the ecological social and economic aspects of protected areas, including methods and techniques for valuation of goods and services from protected areas	• Namibia recognizes the importance of both biophysical and socio-economic factors in the management of protected areas. Economic evaluations of indirect and direct benefits from protected areas have been carried out	➲
4.4.3 Encourage studies to improve the knowledge of the distribution, status and trends of biological diversity.	• Study underway to develop biodiversity specific indicators for Namibia's protected areas • Study completed on the impacts of climate change on biodiversity and Namibia's protected areas	➲
4.4.4 Encourage collaborative research between scientists and indigenous and local communities in accordance with Article 8(j) in connection with the establishment and the effective management of protected areas	• Collaborative management fora create opportunities for the exchange of information, and the use of scientific and indigenous knowledge in the development of management plans	➲
4.4.5 Promote the dissemination of scientific information from and on protected areas including through the clearing-house mechanism.	• SPAN has developed its own website www.span.org.na containing up-to-date information and publications • This information is also being integrated into a new MET website www.met.na	✓
4.4.6 Promote the dissemination of, and facilitate access to, scientific and technical information, in particular publications on protected areas, with special attention to the needs of developing countries and countries with economies in transition, in particular least developed countries and small island developing States.	• Quarterly newsletter set up through the SPAN project with particular focus on protected areas. 10,000 copies are distributed free of charge to stakeholders around Namibia since 2005 • Park Talk - a regular bi-monthly evening presentation and discussion session forum - was launched in 2005. Meetings usually include a presentation from a selected individual or group on a selected topic, followed by a discussion session. • The SPAN project also runs ParkNet – an email based discussion forum where members can debate matters related to park management in Namibia	✓
4.4.7 Develop and strengthen working partnerships with appropriate organizations and institutions which undertake research studies leading to an improved understanding of biodiversity in protected areas.	• An excellent partnership framework approach is in place in Namibia with the involvement of Government, NGOs, donors and the private sector • Long term ecological research data is available for Etosha and the Namib Naukluft Park (from the Etosha Ecological Institute of Research and Gobabeb Training and Research Centre), but there is a clear need to improve systematic research in the country's other protected areas	➲

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