Biodiversity and Development in Namibia

Namibia's ten-year strategic plan

of action for sustainable development

through biodiversity conservation

2001-2010

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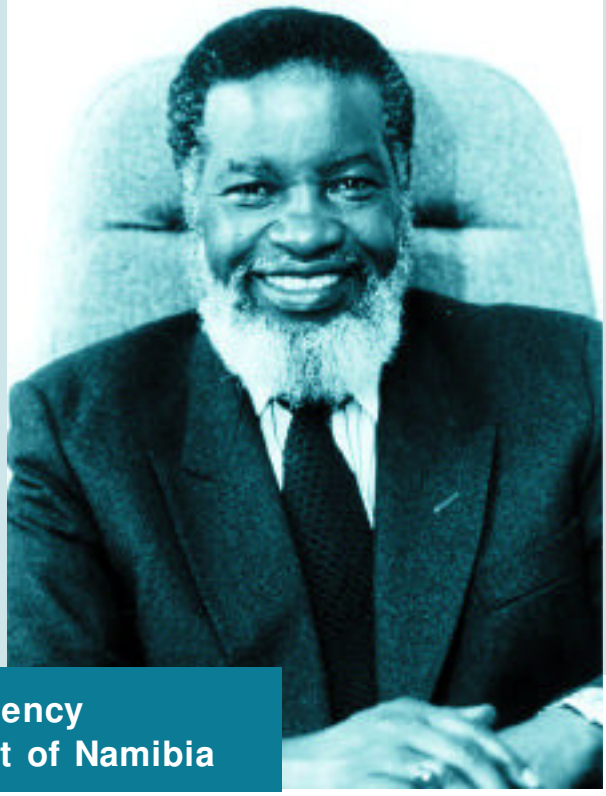
Foreword



by His Excellency the President of Namibia

Namibia gained her Independence in 1990, at the onset of a new era of environmental management and development. The United Nations Conference on the Environment and Development (UNCED) in Rio de Janeiro in 1992 formally marked this new era. From the beginning of Namibia's young democracy, the twinning of environmental and development issues has been pivotal. In a country as arid and dependent on natural resources as Namibia, this association is critical to our future. This is why our Constitution explicitly promotes development through sustainable resource use and the protection of biological diversity and ecosystems – summarising the old African proverb that "The earth is not ours, it is a treasure we hold in trust for future generations."

I am proud that the publication of our National Biodiversity Strategy and Action Plan (NBSAP) coincides with this year's World Summit on Sustainable Development, underlining Namibia's commitment to both principle and action. It gives me pleasure to say that our biodiversity strategy is one of the earliest and most participatory in Africa and the world at large. Namibia has also formulated a range of new environmental policies and legislation, which the NBSAP supports and supplements with tangible activities.

Namibia has a vision – Vision 2030 – supported by five-year national development plans to transform ourselves from a developing lower-middle income country to a developed high-income country by the year 2030. The NBSAP is a milestone of strategic planning on the way to 2030,

so that the achievement of the essential targets for Vision 2030, NDP2 and NDP3 works with, and not against, our natural resource base.

The Government of the Republic of Namibia is committed to the principle that resource users, when fully enabled, are the best managers and custodians of resources. The NBSAP focuses on strengthening capacity at these levels, and on incentives for good management of the resources on which people depend for their survival and livelihoods.

It is a pleasure to see how many individuals and institutions from the public and private sectors have contributed to working groups and teams in the making of this document. We in Namibia know the need for close collaboration and partnerships. Coming with a difficult heritage of an apartheid past, it is by no means taken for granted that people from all walks of life work well together and with great commitment, so it is a source of pride when they do.

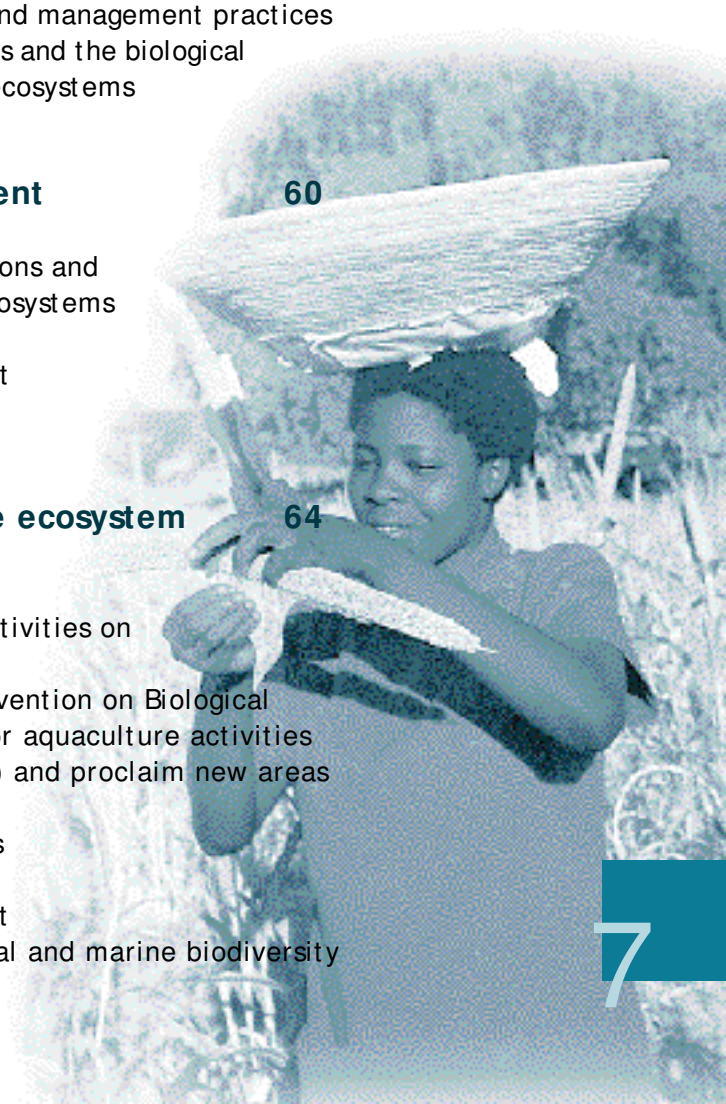
However, we also still have to face the challenge of capacity building. For many decades, the environment and conservation were fields practiced mainly by whites – as were the sciences and related professions. While good changes have taken place over the past decade, much more effort must be placed into the transfer of skills and the building of technical and scientific capacity - so that our young specialists are equipped with the skills, the confidence, and the will to deliver results and build the nation.

Despite all the commitment to biodiversity and development that exists in Namibia, one of our greatest challenges remains the sourcing and allocation of enough funds to achieve what we have planned. Considering other important sectors such as education and health, sustainable environmental management has one of the larger budgets, while being only one priority among many. In view of the pressing land issue to be resolved in our country – in a socially equitable and environmentally sustainable way – we are committed to find technically and socially acceptable solutions and to make this issue a Namibian priority.

We can view environmental management as a luxury which Namibia cannot afford, in which case the costs of restoring degraded land, alleviating widespread poverty and breaking the spiral of dependency will almost certainly be more than Namibia can bear. Or, as I expect, we will view investment in environmental management as one of the most cost-effective ways to achieve national development. For me, this means building a truly great nation which will experience prosperity, equitability and stability far into the future.

Sam Nujoma

President of the Republic of Namibia



Contents

Editorial note

Namibia's National Biodiversity Strategy and Action Plan (NBSAP) 2001-2010 is the product of three years of participatory planning and drafting. This policy document is the first of its kind – underpinning Namibia's excellent Constitutionally based planning and policy framework on the environment and development with a contemporary strategy and a detailed action plan.

More than 150 people representing roughly 40 organisations - government ministries, research and training institutions, non-governmental organisations, community-based organisations, private businesses, parastatal service providers, unions and associations, farmers, natural resource users and other interested individuals - contributed directly to the shaping of this national strategic plan.

This has been a highly participatory (and time-consuming!) strategic planning process. Our main source of inputs and peer review have been from technical and management professionals in the areas of environment, development, natural resource management, biodiversity science, technology, rural development, economics, policy and legislation, but we have also made attempts through workshops, Permanent Secretaries' Roundtables, private briefings and other means to hear the inputs of a variety of senior Government decisionmakers. An external review panel consisting of both senior technical specialists and decisionmakers gave us important further direction. The document has been circulated to the heads of all Ministries for comment before its submission to the Cabinet and Parliament. We hope that this unusually good level of technical and senior management engagement with the process will help shape a broad political acceptance of this document as one of Namibia's core strategies for sustainable development.

Why is this document so important? For Namibia, perhaps even more than for other nations, development and environment are two intertwined concepts. Much of Namibia's economy and most of its people depend directly on the natural resource base and diverse ecosystems, from arid rangelands, to brimming wetlands and rivers, to cold, productive seas. There is an intricate link between environmental sustainability and biological diversity, so biodiversity conservation and sustainable use need to be carefully planned in our country, to help achieve sustainable national development. This is the purpose of this document.

The NBSAP is made of three main parts. **Part A** is an introductory section to help the reader gain a quick overview of the concept of biological diversity, its role for Namibia's future development, and Namibia's efforts to preserve and use its resources. **Part B** contains the actual National Strategy, which summarizes the roughly 50 strategic aims to achieve sustainable development through

biodiversity conservation over the next decade, with priority actions identified to support each one. **Part C** underpins the text of these strategic aims with detailed action plans, which flesh out these priority actions in logical framework format. Overall, ten thematic chapters are covered under Parts B and C, including sections on conservation, sustainable use, research and environmental change monitoring, sustainable management of the land, wetland and marine environments of Namibia, integrated planning, Namibia's international role, capacity building, and mechanisms for implementation.

The drafting of this strategy and action plan, a commendable effort by many of you, has only been the first step on a long journey. Now the hard work starts, to implement our ambitious action programme!

It will be important to look back regularly, but especially in five and ten years' time, at what we have managed to accomplish of the many challenging tasks, projects, reforms and targets we have set for Namibia in its second decade of Independence. Then it will be time to reflect, revise our plans, and resume where we left off.

Hoping for good and close collaboration,

The editorial management team

Phoebe Barnard
Sem Taukondjo Shikongo
Juliane Zeidler

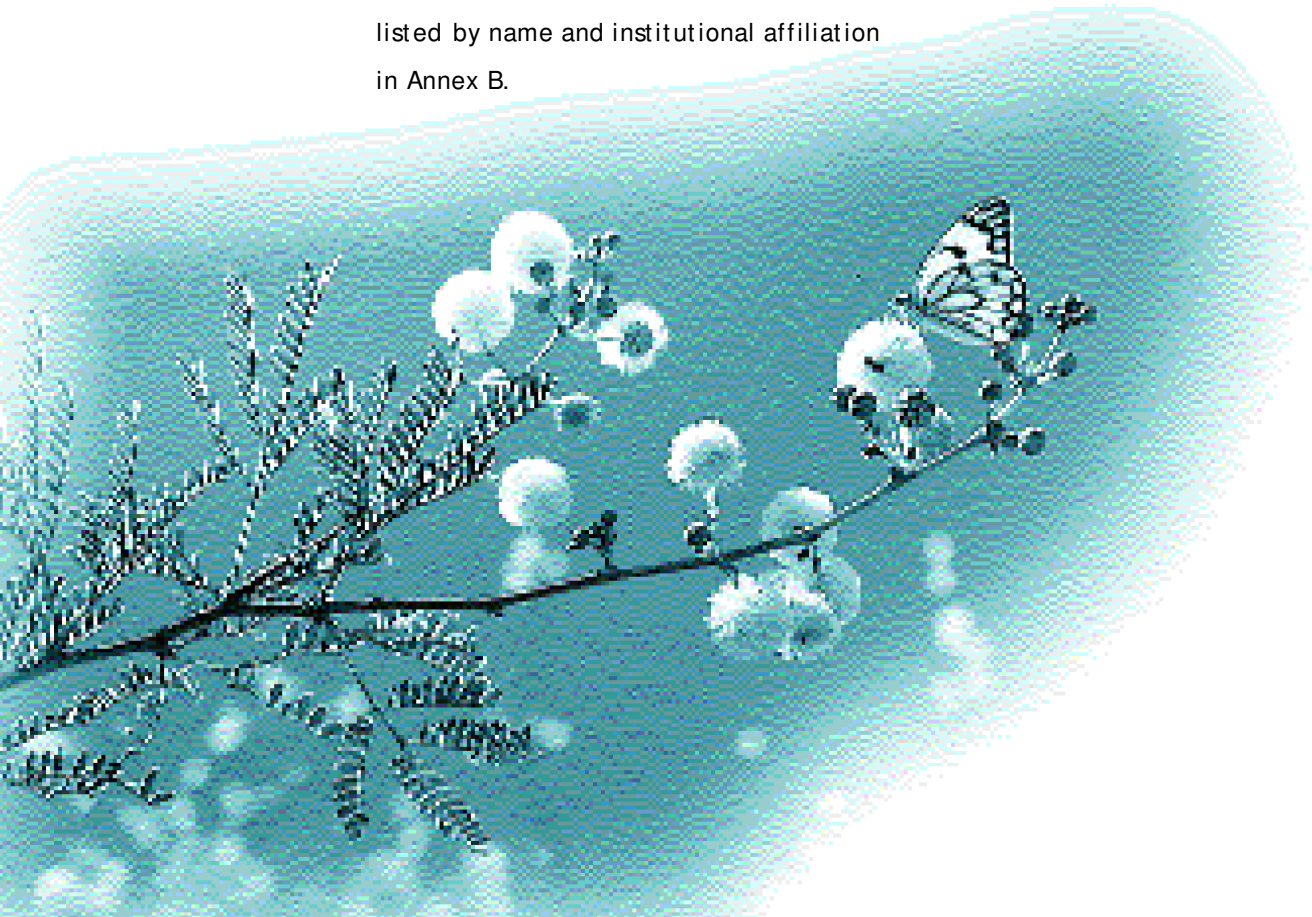
Acknowledgments

Acknowledgments

The contributions of several hundred people –not only the 157 people who have contributed to the National Biodiversity Task Force, its working groups, the staff of the National Biodiversity Programme and its projects, but also the many dozens of additional participants in public workshops - make up the heart of this National Biodiversity Strategy & Action Plan. Members of the Task Force's working groups, which made the most concerted contributions, are listed by name and institution in Annex A. Their contributions were circulated, peer-reviewed among the technical community in Namibia and elsewhere, and workshopped and endorsed by the National Biodiversity Task Force. Members of the External Review Panel who very graciously devoted their time, wisdom and expertise to the process are listed by name and institutional affiliation in Annex B.

These very diverse individuals have contributed enormously to the scope, detail and essence of this document, as a planning tool for the sustainable national development of our country, linking biodiversity, the environment and development.

Financial investment in the development of this document was made by the Global Environment Facility (GEF) through the United Nations Environment Programme (UNEP), by the Government of the Federal Republic of Germany through its Agency for Technical Cooperation (GTZ), and by the Government of the Republic of Namibia through the Ministry of Environment and Tourism. The support of these institutions for truly sustainable development in Namibia is highly appreciated.



The NBSAP has three main sections:

Part A - Introduction

Overview of the concept of biological diversity, its role in development and Namibia's efforts to preserve and use resources sustainably.

Summary

Summary

This document, Biodiversity and Development, is Namibia's National Biodiversity Strategy and Action Plan (NBSAP). It is the product of a very participatory three-year national process by which Namibia has identified and prioritised the strategy and actions for achieving its goal:

> The goal of the Government of the Republic of Namibia through this strategic plan 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.

Part B - The Strategy

Summary of the 55 strategic aims in 10 chapters, and activities with date-bound targets for implementation, for use by policymakers.

Part C - The Action Plan

Detailed breakdown of the strategic aims and activities in logframe format, for use by national and sectoral planners.

The ten chapters highlight priority themes and activities which we as a country must address to conserve our biological diversity and achieve sustainable development. Some common threads appear throughout – scientific training, management capacity, policy frameworks, and incentives to conserve biodiversity and manage resources sustainably. A basic premise of this book is that good information is needed to inform good development planning.

Chapter 1, on conserving biodiversity in priority areas, puts a better-designed and managed parks system for Namibia at the

core of biodiversity conservation. However, Namibia's famous parks system, or protected area network, cannot on its own adequately conserve biodiversity. Land uses that bring direct benefits to local people, such as communal and freehold conservancies, are essential for both conservation and rural development. Conservation of species which are endemic or unique to Namibia, or which are threatened in some way, is essential for us to protect our national heritage and implement the Convention on Biological Diversity.

Chapter 2 focuses on sustainable resource use. Although called for in Namibia's Constitution, the sustainable use of resources is difficult to ensure without greater support and incentives for people using resources, and without greater freedom from the poverty and other constraints that tend to cause degradation of resources.

Chapter 3 highlights Namibia's vulnerability to degradation, and proposes an early warning system for monitoring, predicting, and coping with environmental change – be it local scale degradation or broader-scale climate change. Sustainable development planning requires sound information systems for natural resource management, a conducive policy and legal framework, political-technical decision-makers' dialogue, and measures to manage and mitigate degradation.

Chapters 4, 5 and **6** stress the need for sustainable resource management in land, wetland and coastal and marine ecosystems, respectively. In all ecosystems, whether desert landscapes, agricultural or forestry systems, or freshwater or marine fisheries, the common threads are sound management through information and policy advice, strengthening of revenue-generating sustainable resource uses compatible with biodiversity conservation, and protection of priority areas or resources which require additional management, such as water resources, mountain ecosystems or coastal wetlands. Harmonized policy and legislation are needed to provide the right framework for sustainable resource practices.

Like many countries, Namibia has suffered in the past from poorly integrated sectoral planning and management, which wastes precious funds and human resources through duplication, contrary activities, and little or no communication. Yet we have a major advantage over many countries in having a progressive and supportive Constitution, an environmental planning framework which emphasizes the need for integration, and a number of excellent partnerships between government and non-government players.

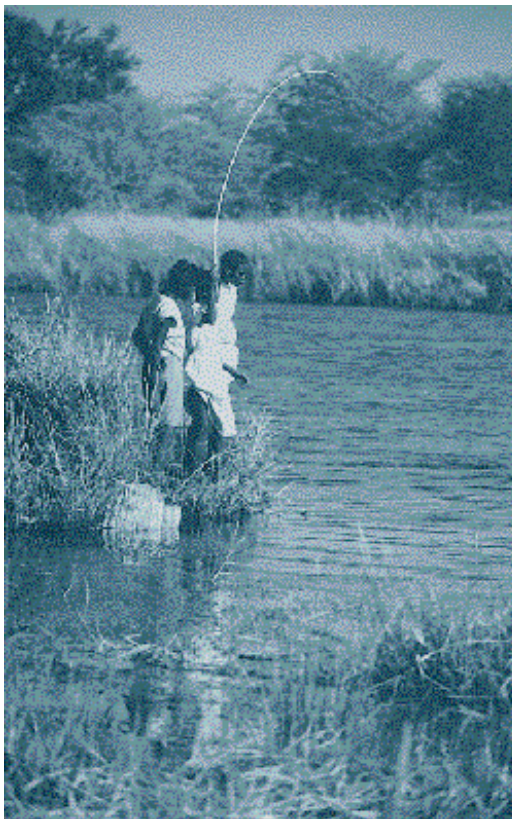
Chapter 7 focuses on building these partnerships and mechanisms further, and streamlining policy and legal frameworks, especially as Namibia proceeds with decentralizing many government functions.

Chapter 8 focuses on the important issues of political will and Namibia's role in the broader international community. This includes the will to invest wisely in sustainable development in the currently favourable climate of international aid, for the days to come in which Namibia, as a developing higher-income country, will have to shoulder a greater proportion of its own development needs.

Chapter 9 dwells on one of Namibia's biggest outstanding challenges, that of capacity building in the sciences, economics, resource management and community development which underlie good biodiversity conservation. The scientific and technical professions in particular, such as biosystematics, have been badly neglected and require considerable strengthening for Namibia to continue its lead role in this area with a new generation of young Namibian professionals, well trained and imbued with a dedication to serve our country into the future.

Finally, **Chapter 10** focuses on the structures, financing and communication mechanisms needed to implement this strategy and action plan effectively. This will require a willingness on the part of the Government and its partners to build upon the momentum of NDP2, Vision 2030, and this document in order to achieve good integration and truly sustainable development.

PART A Introduction



components of our national heritage. They are the fundamental basis for Namibia's economy and the livelihoods of rural and urban living people.

"Every country has three forms of wealth: material, cultural, and biological. The first two we understand well because they are the substance of our everyday lives. The essence of the biodiversity problem is that biological wealth is taken much less seriously. This is a major strategic error, one that will be increasingly regretted as time passes."

Edward O Wilson, 1992

Namibia's superb biological diversity

Namibia's biodiversity is superb, and represents a huge asset to the local, national, and global communities. Namibia is a very dry country – more arid, and vulnerable to degradation, than any in Africa south of the Sahara Desert. But it has a remarkable variety of habitats and ecosystems, ranging from deserts with less than 10 mm of rainfall per year to subtropical wetlands and savannas with over 600 mm. Our scenic vistas, with their brooding inselbergs, craggy mountains, fogbound coasts and shimmering grassy plains, offer seemingly endless spaces for a surprising array of species. These diverse habitats and species are critical

Namibia's biodiversity hotspots

Namibia is one of the very few countries in Africa with internationally-recognised "biodiversity hotspots." These are areas of such richness and uniqueness that they compare with the great rainforests of Amazonia or the coral reefs of Indonesia. Namibia's most significant "hotspot" is the Sperrgebiet, which is the restricted diamond mining area in the Succulent Karoo floral kingdom, shared with South Africa. The Succulent Karoo is the world's only arid hotspot. It holds a truly extraordinary level of succulent plant

diversity, shaped by the winter rainfall and fog of the southern Namib Desert. A large portion of its plants, and by association probably its insects and vertebrate animals, are endemic – that is, they occur absolutely nowhere else in the world. Namibia's portion of the Succulent Karoo has been generally very well protected through its 'forbidden area' (Sperrgebiet) status as a large mining concession for many decades.

As the economic viability of diamond mining declines over time, increased direct Government management responsibility for the area is essential. This strategy strongly endorses the recommendation of the recent Sperrgebiet Land Use Plan that Government proclaim the entire area as a multiply-zoned national park, with very tightly controlled and low-impact prospecting and mining allowed only for strategic mineral deposits.

Also significant internationally is the rugged Namib Escarpment, which runs up the spine of Namibia from south to north and is part of Africa's 'great western escarpment.' Its northern, Kaoko section in particular is home to a vast array of endemic plants, animals and other organisms. This area was previously protected by a large corridor linking the Etosha National Park to the Skeleton Coast, which was deproclaimed under the apartheid-era 'Odendaal Plan' for tribal homeland development. Today, a mosaic of communal conservancies allows rural communities to generate income through biodiversity management and rural development, in a much more equitable land use based on natural resources. These two hotspots are not just national assets, they are special and significant global treasures.

The importance of dryland biodiversity

The drylands of the world are home to several billion people, mostly in developing countries. Agricultural potential is often marginal in these areas, so crops and livestock need to be well adapted to drought, frost, and often salinity. The natural genetic diversity of crops and livestock in Namibia, as in many other drylands, is of great importance in agriculture. The biological diversity of the soil, including termites, fungi and micro-organisms, gives the soil in drylands its meager fertility, and this needs careful management to sustain people's livelihoods. Because rural people in drylands are often living at the edge of survival, this biodiversity

offers an important buffer against drought and famine.

Further, drylands with ancient and high mountains, such as those of Namibia, Lesotho, and Ethiopia, harbour important endemic species and habitats. These mountains are extremely special and important refuges for biodiversity, and important components of ecological processes within rangelands under pressure.

Biodiversity, environmental change, and human livelihoods

Many people do not instinctively realize the links between a diverse environment and a healthy one. Environments that lose some of their biodiversity tend to become unstable in an ecological way. They lose more species, and then lose some of their ecological processes - such as the recharge of aquifers by soaking rainfall, or the pollination of fruit trees by bees. Such degraded environments may then also become unstable in an economic way, becoming less able to support people and their livelihoods. Fishermen must venture further and work longer hours to catch enough fish; women must walk further to fetch wood or material for medicines or dyes; livestock grow gaunt when palatable grasses are gradually replaced by unpalatable or poisonous plants; tourists stop coming to an area perceived as degraded.

Gradually – or sometimes suddenly, in times of drought – the threshold between well-being and hardship, or even survival and death, can be crossed as environments become degraded. The capacity of the environment to support humans and their activities is diminished. Environmental degradation can turn normal 'hardship spells' into a destructive cycle of poverty and dependency on food aid that is nearly impossible to break.

Coping with environmental change

Environmental change is a matter of reality in Namibia, as elsewhere. It can happen as part of large scale, long term natural processes, such as those that accompanied the ice ages of millennia past. Or it can come about as part of human-caused processes, such as land degradation (including desertification) and industry-driven climate change.

Changes in biological diversity are worrisome because they may pose risks to the entire functioning of our ecosystems, which support our livelihoods, economy and survival.

Namibia has undergone natural environmental change for millions of years. The difficulty we face now - for biodiversity and development - is the pace of this change, and our limited ability to anticipate and adjust to it.

Climate change will create major challenges for Namibia. Dry, hot countries are in general expected to get drier and hotter. This is expected to have serious impacts on biodiversity and development.

First, it is expected to force changes in the distribution of species and habitats, especially along Namibia's escarpment where most of its unique species occur in very restricted areas.

Second, it is expected to make the living conditions of rural people in Namibia's dry rangelands even more difficult, partly due to increased unpredictability of rainfall.

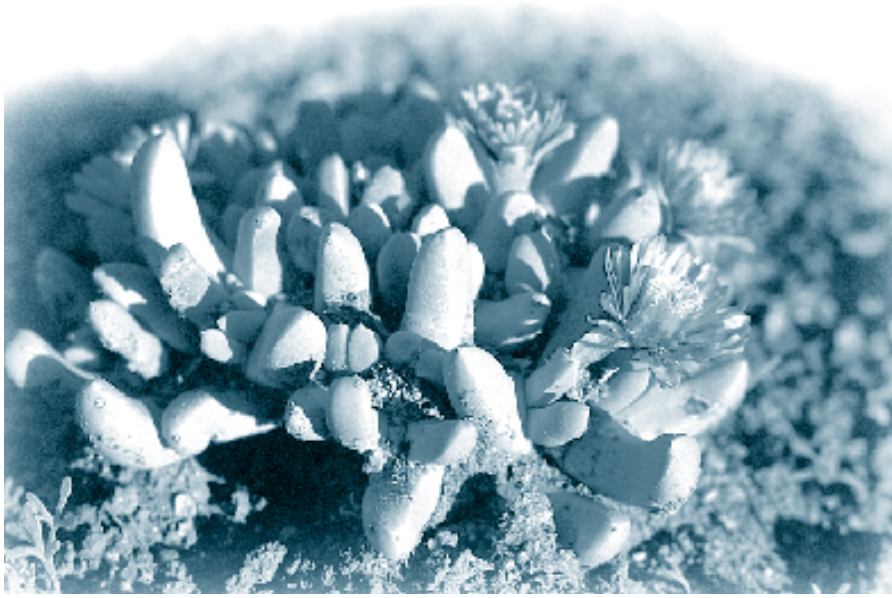
Third, it is likely to change patterns of infectious disease transmission in the country, and therefore, our disease control strategies such as pesticide application.

And fourth, among many other serious potential changes, it may jeopardize coastal and marine activities through sea-level change and alterations to the Benguela Current.

Without detailed analysis of information from a network of monitoring sites and activities, we cannot anticipate or cope with the likely impacts of environmental and climate change.

Namibia's 1999 country study on climate change made the dramatic point that although we are not a major emitter of the 'greenhouse gases' that drive climate change, we are one of the most vulnerable countries in the world to its impacts. Focused monitoring and analysis of environmental change, through climate change, desertification and biodiversity loss, are an essential part of an early warning system that enables us to adapt to these changes.

Ultimately, science and information can only guide decision-makers - whether they are farmers, politicians, economists, industrialists or other resource users. The fundamental decisions to be made will rest on the strength of more fallible human qualities, such as vision, adaptability, efficiency, selflessness and wisdom.



The purpose of this document

Biodiversity & Development is a key strategy and action plan for sustainable development. It provides overall strategic guidance for the implementation of Article 95 L of the Namibian Constitution, and detailed, practical activities through which we can achieve sustainable development through wise management of our biological resources and environment. It is also the detailed implementation plan for the UN Convention on Biological Diversity (CBD), which the President, His Excellency Dr Sam Nujoma, signed on Namibia's behalf at the UN Conference on Environment and Development held in Rio de Janeiro, Brazil, in 1992. The CBD was ratified unanimously by Parliament in 1997.

The conservation of biological diversity cannot be separated from the 'maintenance of ecosystems and essential ecological processes.' This is why Article 95 L mentions them in the same breath. Ecosystems are units of biodiversity, interacting with their physical environment, and they are rapidly degraded when biodiversity is lost. Essential ecological processes are the 'glue' which binds ecosystems together – the unseen functions carried out largely by biodiversity, such as nutrient cycling, pollination, topsoil formation and so on. Without these processes, life would not be possible. Biodiversity & Development therefore treats the conservation and sustainable utilisation of biodiversity in the holistic sense of Article 95 L – integrally with the protection of ecosystems and their functions.

The 1992 Convention on Biological Diversity, agreed two years after Namibia's Constitution came into force, echoes the three key principles of Article 95 L - conservation, sustainable use, and fair sharing of benefits.

Article 95 of the Constitution requires our government to take measures to promote and maintain the welfare of the people. Among these are measures aimed at:

"the maintenance of ecosystems, essential ecological processes and biological diversity of Namibia and utilization of living natural resources on a sustainable basis for the benefit of all Namibians, both present and future..."

The Convention on Biological Diversity provides for:

- the conservation of biological diversity and essential ecological processes;
- the sustainable use of biological resources;
- the equitable sharing of benefits arising from the use of biological resources.

Biodiversity & Development is the main product of many months of inter-sectoral dialogue, debate and prioritisation. It is a long-term strategy, although the priority activities which make up its 'action plan' are proposed for a ten-year planning horizon, in the years 2001-2010.

As a national strategic plan for the conservation of biological diversity, Biodiversity & Development aims to:

(a) provide a national strategic framework for natural resource management activities involving biological resources and the natural environment, including trade and economic incentives, and

(b) prioritise, through detailed action plans, activities and measures needed to address this strategy effectively for the next decade, with cost estimates for each.

Who has been involved?

PART A

This strategic plan is inter-sectoral, but coordinated by the Ministry of Environment and Tourism (MET). Therefore, the plan and its implementation are by no means the sole responsibility of the MET. The plan involves numerous key issues, including but not limited to:

- Agriculture and genetic resources
- Marine resources
- Public health and water resources
- Trade, bioprospecting and globalisation
- Energy and mining
- Education and heritage
- Land use and land reform
- Justice and the rights of civil society
- Legal and economic incentives

Dialogue and joint planning to build the Biodiversity Strategy and Action Plan therefore took place among a broad section of the Namibian community – government agencies, non-government organisations (NGOs), rural development organisations, farmers' unions, agricultural marketing boards, parastatals and interested private individuals.

Most of the formal technical-level input to the strategic plan has been via the technical working groups of the National Biodiversity Task Force (Annex A), which is coordinated by the MET. Political guidance was pursued via roundtables and other direct contacts with senior representatives of Government Ministries, NGOs, specialist societies and boards with important political perspectives on the Namibian environment and society. Both levels of input will continue to be essential in implementing this strategic plan.

All government ministries were invited to participate, as well as various NGOs, educational institutions, parastatals and unions. Those that have contributed significantly in one way or another include the following:

Government ministries and agencies:

Agriculture, Water and Rural Development, MAWRD
Basic Education, Sport and Culture, MBESC (National Museum of Namibia)
Defence, MoD
Environment and Tourism, MET
Finance, MoF
Fisheries and Marine Resources, MFMR
Higher Education, Training and Employment Creation, MHETEC
Lands, Resettlement and Rehabilitation, MLRR
Mines and Energy, MME
National Planning Commission, NPC
Regional and Local Government and Housing, MRLGH
Trade and Industry, MTI

Tertiary education institutions:

Polytechnic of Namibia, PoN
University of Namibia, UNAM

Unions and parastatals:

Namibia Agricultural Union, NAU
Namibia Eagle Traditional Healers' Association, NETHA
Namibia National Farmers' Union, NNFU
Namibia Traditional Healers' and Practitioners' Board, NTHPB
Namibia Water Corporation, NamWater
Namibian Agronomic Board, NAB

Non-governmental organisations:

Centre for Research Information Africa Action, CRIAA
Desert Research Foundation of Namibia, DRFN
Namibia Nature Foundation, NNF
Namibia Non-Governmental Organisation Forum, NANGOF
Working Group on Indigenous Minorities of Southern Africa, WIMSA
World Wildlife Fund US, Namibia (WWF-US)
and numerous interested individuals.

The goal

The goal of the Government of the Republic of Namibia through this strategic plan 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.

Basic principles

The strategic plan rests on the recognition of fifteen fundamental principles –

1. The conservation of biological diversity and the sustainable use of biological resources are prerequisites for sound and effective national development.

2. Namibia's thousands of life forms have intrinsic value and importance, and warrant our respect and stewardship, whether or not they are of direct use to us.

3. Investment in sound ecosystem management is much preferable to the difficult, usually unaffordable and inevitably incomplete restoration of damaged environments.

4. Biological diversity is best conserved in the natural environment, with integrated management which focuses on the ecosystem as a whole.

5. Sound environmental and development planning is underpinned by good science and economics.

6. Traditional knowledge of biological resources and sustainable resource management deserves recognition, respect, and equitable treatment especially where benefits from the use of this knowledge arise.

7. Lack of complete knowledge is no excuse for delaying action to conserve biological diversity.

8. Decision-making about the allocation and use of Namibia's resources should be efficient, fair, honest, transparent and above all, objective.

9. The Government is primarily responsible for maintaining the health of Namibia's biological diversity, but all Namibians have a role to play through responsible attitudes and action.

10. Effective, innovative partnerships and coalitions of government, individuals and organisations that use and manage biological resources are required to meet conservation and development goals.

11. Namibian women have a prominent role in the implementation of this strategy - as resource custodians and harvesters, scientists, educators, consumers, and in many other roles.

12. Conservation and sustainable use of Namibia's biological diversity is affected by international activities and requires international collaboration and co-operation.

13. A comprehensive, representative network of ecologically viable protected areas is critical to, but by itself insufficient for, the effective conservation of Namibia's biological diversity.

14. Protected areas are hubs of sustainable economic development and must be carefully integrated with the sympathetic management of agricultural and other areas.

15. Wise natural resource management is most urgently needed in arid landscapes, in which many people live at the edge of survival.

Further reading

Our biodiversity is well known compared to that of many countries, but we still have huge, fundamental gaps in our knowledge.

Information on our valuable biological diversity was initially summarised in 1998 in the book **Biological diversity in Namibia** (Barnard, 1998), and in a companion set of scientific papers published in 1998 in the international journal **Biodiversity & Conservation**. A great number of coffee-table books on Namibia's beautiful deserts are available - **Living deserts of southern Africa** (Lovegrove, 1998) should be mentioned for its highly research-based content communicated in simple terms. More recently, Namibia's 2002 national atlas (Mendelsohn, Jarvis, Roberts and Robertson, 2002) will publish updated national maps and analyses of certain biodiversity-related patterns and trends. A diversity of related publications are available at the Ministry of Environment and Tourism and in local bookshops.

For further information and downloadable publications:

http://www.dea.met.gov.na

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PART B

The National Biodiversity Strategy

Implementing the national biodiversity strategy needs the full and informed involvement of all Namibians. It cannot be carried out in isolation by government or any other group; it must be understood to involve a very high degree of active engagement by stakeholders, interested parties, and indeed all of us.

It is the right of everyone to expect national development, environmental sustainability, sound resource management, and freedom from the poverty and dependency that so often follow environmental degradation and policy mistakes. It is the responsibility of everyone to work for these aims, and help put this strategy into practice. Rights and responsibilities go together in achieving these aims.

This section, **Part B**, outlines and prioritises the recommendations for each theme of the national strategy, as developed participatively by national working groups and public workshops of the National Biodiversity Task Force. It outlines overall objectives, strategic aims, and major targets. The strategic aims are briefly listed at the onset of each chapter providing a short overview. Certain targets are dated 2001 and early 2002, most of which have been achieved already on schedule.

The detailed action plans supporting the recommendations and activities are found in **Part C**. This section consists of a number of theme-based action plans in logical framework format. These appear in the same order as the strategic aims in Part B and give supporting details of lead agencies, timeframes, and estimated financial needs to carry out these activities needed to implement the strategy.

1 Conserving Biodiversity in Priority Areas

OBJECTIVE 1

Strengthen the detailed implementation of the Constitution of the Republic of Namibia (Article 95 L) by adopting specific measures to improve the protection of ecosystems, biological diversity and ecological processes, and to improve the sustainability of biological resource use.

STRATEGIC AIMS OVERVIEW

1.1 Identify and fill specific gaps in the protected area network

1.2 Promote and support communal and freehold conservancies

1.3 Strengthen conservation measures in and outside protected areas

1.4 Address the needs of endemic and threatened species

1.5 Strengthen ex-situ and in-situ conservation capacity

STRATEGIC AIM 1.1

IDENTIFY AND FILL SPECIFIC GAPS IN THE PROTECTED AREA NETWORK

a **Complete a systematic biodiversity area-prioritisation process to identify high-value areas for biodiversity**

Systematic decision-support tools for biodiversity prioritisation are cost-effective, reliable, objective and advanced. Preliminary work needs reanalysis with new data to identify biodiversity-rich sites needing protection in the terrestrial, freshwater and marine environment (see also chapters 4, 5 and 6).

Targets: *Completed fine-scale prioritisation of terrestrial biodiversity areas by 2003; freshwater and marine areas by 2004*

b **Review current land uses and management systems, including protected areas, conservancies, rangelands, mining areas and other forms of management in terms of their effectiveness in biodiversity conservation**

To be able to make sound recommendations on suitable and sustainable forms of land use in Namibia, their contribution to biodiversity conservation and environmental sustainability has to be assessed.

Targets: *A first overview of the main land use and management systems is published by June 2004*

c Review the management goals, practices and capacity of the existing state protected area network, and make pragmatic recommendations for improvement

The management of many state protected areas has been primarily focused on the conservation of large game species, and management capacities in many countries are declining over time. A sound analysis of Namibia's practical management needs and capacity is needed as part of the African Protected Areas Initiative.

Targets: *A consultative report on management goals, practices and capacity needs in the current state protected area network is published by December 2003*

d Prepare proposals for public discussion on additional conservation areas in the state and supplementary network, especially in high-value, unprotected areas under threat

Conservation priority areas have to be consultatively agreed and proposals developed to secure areas for conservation and sustainable use. In a developing country such as Namibia, land has to be allocated to sustainable and productive forms of use to guarantee a prosperous future for all Namibians. In 'supplemental' conservation areas such as conservancies, rural people can engage in economic activities through conservation, tourism, or other enterprises compatible with biodiversity conservation.

Targets: *National overview of potential land uses and conservation opportunities is generated by December 2004*

e Implement proposals and secure financing for effective long term management

Additional conservation areas may be formal state areas (e.g. national or transboundary parks), private nature reserves, freehold or communal conservancies, or other approaches. Widespread political, public and technical consultation will be essential in the development of proposals. Namibia's globally recognised biodiversity hotspots, the Sperrgebiet and Namib Escarpment, are top priorities for urgent action, as are previously underprotected vegetation types (see box below).

Targets: *Provisional target (to be modified through systematic 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 by 2006*

f Participate in concerted programmes to improve management capacity and train new effective managers

Participation in management training colleges and the African Protected Areas Initiative is an essential way to keep professional management capacity at a good level.

Targets: *Twenty-four state park management staff trained in effective management techniques and management planning by 2004*

Namibia's terrestrial protected area network is well established. But it does not adequately conserve three of our four major land biomes – woodland, savanna, and karoo. Only the desert biome, traditionally regarded as 'valueless' in agricultural terms, is well protected. The protected area network also does not adequately cover 9 of our 14 traditionally recognised vegetation

types, even by comparison to our previous national policy target of at least 10% representation in the network. The 10% figure is an international target widely regarded as the absolute minimum, which does not ensure adequate conservation. In many areas, a much larger figure, even over 50%, is necessary to conserve biodi-versity and ecological processes in a viable way – especially in dryland areas where animals migrate in response to rainfall. Not all of the conserved land needs to be within formally protected areas. But if not, then resource uses that allow for conservation as well as economic activity, such as conservancies, need promotion in the overall landscape.

This strategy proposes a provisional national target of at least 15% coverage in the protected area network for all vegetation types. This can be modified on the basis of a biodiversity area-prioritization analysis. Significantly higher coverage (30-100% coverage in the protected area network and less formal conservation categories) is recommended for Namibia's two globally significant 'biodiversity hotspots.'

These two hotspots are the Sperrgebiet and Namib Escarpment. The Sperrgebiet is part of the Succulent Karoo biome. It is an extremely harsh environment, not suitable for human habitation or agriculture, but supports part of the world's only arid biodiversity hotspot, an ecosystem of unique beauty. The Namib Escarpment cuts through the Succulent and Nama Karoo biomes. Its moister northern section is suitable for low- density nomadic pastoralism, ecotourism and other land uses that do not degrade its mountainous biodiversity.

These targets are achievable through multiple-zone parks which foster sustainable development in a manner highly compatible with biodiversity conservation. In the case of the two global biodiversity hotspots, the 15% formal protection target can and should be exceeded dramatically (in the Sperrgebiet), or supplemented by compatible land uses which provide additional protection (in the Namib Escarpment).

The Sperrgebiet is largely covered by a renewable diamond mining concession, and has been the subject of intensive land use planning. The Sperrgebiet Land Use Plan, which recommends a multiple-zone protected area allowing strictly controlled prospecting and mining, was developed in partnership by the Ministries of Environment and Tourism, Mines and Energy, Lands, Resettlement and Rehabilitation and other stakeholders.

The Namib Escarpment was well protected for much of the past century, but in the 1970s much of it was allocated to 'homeland' development under South African rule. Current land uses along the northern escarpment in Erongo and Kunene Regions, especially conservancies and concessions, are highly compatible with both biodiversity conservation and rural development. By mid-2001, 22 conservancies and concessions (about 4 669 400 ha) had been, or were being established along the escarpment.

By the 15% 'basic' criterion, nearly three-quarters of Namibia's traditionally recognised 14 vegetation types are inadequately covered, many with zero or negligible representation in the network. These are:

desert and succulent steppe (11.8%)
semi-desert and savanna transition (7.8%)
mopane savanna (9.8%)
mountain savanna (0.0%)
thornbush savanna (0.2%)
highland savanna (0.2%)
dwarf shrub savanna (1.9%)
camelthorn savanna (0.0%)
mixed tree and shrub savanna (0.0%)
forest savanna and woodland (8.0%).

As a national priority, creative strategies must be developed participatively for conserving at least a representative 15% of all vegetation types, while fostering appropriate livelihoods and sustainable development.

STRATEGIC AIM 1.2

PROMOTE AND SUPPORT COMMUNAL AND FREEHOLD CONSERVANCIES

a Support the role of consevancies in integrated landscape management for biodiversity

Conservancies are critical assets, which supplement the protected area network, harness the energy and skills of landholders, and bring sustainable development to rural areas.

Targets: *Integrated landscape planning in all of Namibia's political regions, where appropriate involving conservancies, by 2004*

b Use biodiversity data to guide the development of new conservancies

Better biodiversity data, and gap analysis of high-value areas for biodiversity, can guide the development and management of new conservancies, and identify priority zones in existing conservancies.

Targets: *Detailed recommendations to communities and government on additional areas for potential conservancy development by 2003*

c Assess the compatibility of conservancies with national biodiversity goals

Conservancies, where local communities and land users gain property rights over natural resources within their land boundaries, have been promoted as a vehicle for sustainable development. Whether this form of natural resource use and management is compatible with the national biodiversity conservation goal has to be assessed.

Targets: *A scientific assessment of the contribution of conservancies to biodiversity conservation in at least 60% of Namibia's relevant ecosystems is published by 2004*

STRATEGIC AIM 1.3

STRENGTHEN CONSERVATION MEASURES IN AND OUTSIDE PROTECTED AREAS

a Analyse the biodiversity conservation impact of different land management categories

This includes the scientific evaluation of the impacts on biodiversity of land management categories, including but not limited to protected areas, mining areas, different grazing and cropping systems, and communal and freehold conservancies. These analyses are essential to guide the land reform and development processes, and to fulfil our obligations under our key environmental programmes and conventions.

Targets: *A rigorous, internationally peer-reviewed and published biodiversity conservation evaluation of representative areas in all major categories by 2006*

b Strengthen technical capacity among agencies, landholders and service organisations to evaluate and implement conservation measures

Important technical and scientific capacity gaps in resource management are frequently filled in Namibia by NGOs, such as the service organisations supporting conservancies. Support is needed for their efforts and for better scientific training of young resource managers in parks, conservancies and other conservation

areas. Training needed for managers inside and outside protected areas may differ somewhat.

Targets: *Full national capacity to provide adequate, regular and reliable scientific guidance to natural resource managers in 100% of conservation areas by 2008*

STRATEGIC AIM 1.4

ADDRESS THE NEEDS OF ENDEMIC AND THREATENED SPECIES

a Identify priority species for focused research and conservation attention

Red data lists, which prioritise species for conservation and research attention, are needed for major taxa. Some of our endemic species are very poorly known. The ecological and management needs of threatened species are also rarely well known.

Targets: *Peer-reviewed red data lists for all major animal and plant taxa by 2005*

b Develop and implement management and recovery plans for priority taxa

Management and recovery plans are needed urgently for priority plants, animals and even some fungi, especially harvested species with restricted distributions. This will require the strengthening of professional biodiversity science capacity in Namibia (chapter 9).

Targets: *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*

STRATEGIC AIM 1.5

STRENGTHEN EX-SITU AND IN-SITU CONSERVATION CAPACITY

a Strengthen implementation of existing action plans for ex-situ genetic resources conservation

SADC-region initiatives for plant and live-stock genetic resources conservation have been effective. Government will soon need to assume full financing and imple-mentation responsibility. Similar initiatives on wildlife and fisheries are also required.

Targets: *Effective implementation and full government financing of existing national action plans by 2005*

b Promote conservation and awareness of importance of agricultural genetic diversity

International initiatives to strengthen capacity in plant genetic resources conservation have been very successful within Namibia. However, strengthened government effort to the issue is needed. Still required are an inventory of existing genetic resources; the ongoing collection of germplasm of local landraces and indigenous wild species; effective measures for ex-situ and in-situ conservation; characterization of local germplasm on genotypic and phenotypic levels; evaluation of local germplasm; and awareness campaigns at local, national and international levels.

Targets: *50% of germplasm of use to Namibia local landraces and indigenous wild species are characterised by 2005*

2 Sustainable Use of Natural Resources

OBJECTIVE 2

Facilitate sustainable natural resource management throughout Namibia as a fundamental theme of development planning, through appropriate ecosystem management and land use practices and selective, sustainable harvesting of species.

STRATEGIC AIMS OVERVIEW

2.1 Enhance capacity to harvest biological resources sustainably

2.2 Develop monitoring and incentive systems for sustainable natural resource use

2.3 Conserve and sustainably use agricultural biodiversity

2.4 Use indigenous knowledge systems for sustainable management and use of biodiversity

2.5 Promote and control bioprospecting and biotrade to generate sustainable benefits

2.6 Ensure the safe use of biotechnology in Namibia

STRATEGIC AIM 2.1

PART B

ENHANCE CAPACITY TO HARVEST BIOLOGICAL RESOURCES SUSTAINABLY

a **Promote detailed dialogue on the operational use of the sutainable use concept in different sectors (water, fisheries, wildlife and veld products, forestry, agriculture, tourism)**

An informal dialogue between sectors and disciplines is needed, as the concept of sustainable use of biological resources is unfamiliar to many Namibian resource users, and has not been defined operationally in a practical and consistent way.

Targets: *User-friendly, practical guide to determining sustainable harvesting and resource management and illustrating good and poor practice, based on national dialogue, is distributed to resource managers and decisionmakers by 2004*

b **Strengthen quota-setting, monitoring, carrying capacity guidelines, and enforcement capacity in local and national resource users, service organisations and regulatory agencies**

Professional support and training will help ensure adherence to our Constitutional principle of sustainable resource use. The capacity of the competent agencies and NGOs in this field is overstretched.

Targets: *Three successful short training courses held for users, community service organisations and regulatory agencies on request by 2004*

c **Develop markets for the sustainable harvest of natural resource products (including non-timber and wildlife products)**

Together with the complex support mechanisms that need to be provided to natural resource users in order to harvest sustainably, this market development will involve -

- Socioeconomic surveys to establish new potential products and facilitate local market development;
- Provision of credit schemes for sustainable agriculture practices;
- Improvement of local crafts and development of export markets;
- Identification of measures to reduce craft industry impact on high value species;
- Development of improved permit system linked to community co-operatives;
- Development of forest and other natural resource certification systems for products from sustainable management practices;
- Establishment of monetary value of forest biodiversity in different case studies;
- Linking with relevant programmes of the Ministry of Agriculture.

Targets: *A report listing already marketed natural resource products and elaborating on further potential serves as guideline for resource users to diversify their products by 2003*

Sustainable use of renewable natural resources is enshrined in Namibia's Constitution, but most people have only a vague idea of what it means, or how to determine it in practice. For harvesting management, broadly consistent and time-bound definitions are essential. The time element is important because some resources which renew themselves quickly, such as thatching grass or pilchards, can be harvested more regularly or intensively than those which do not, such as desert succulent plants or the orange roughy.

STRATEGIC AIM 2.2

DEVELOP MONITORING AND INCENTIVE SYSTEMS FOR SUSTAINABLE NATURAL RESOURCE USE

a Facilitate the development of community/user based monitoring systems in support of adaptive management of natural resources

Monitoring of the natural resources under use is an essential management tool (see also chapter 3). If resources are becoming critically low or their natural recovery dynamics are disturbed, they need to rest and be rehabilitated. Harvesting rates can on the other hand be increased if the resource base is large and expanding. It is important that resource users themselves carry out monitoring and adaptive management, as they are the custodians of the resources.

Targets: *Support materials for specific groups of natural resource users on why and how to monitor aspects of the environment is produced and distributed by 2003*

b Develop and implement incentive systems for sustainable use of natural resources

Incentives are needed to make the sustainable management of natural resources, including biodiversity, profitable. The National Drought Policy, for example, makes provision that only those farmers who can prove that rainfall on their farms was below acceptable limits during the season, and managed their range responsibly by appropriate de- and restocking, are eligible for drought relief. Policy incentives and rigorous implementation can provide a useful "carrot-and-stick" for sound management.

Current revisions of land-related policies must also include such incentives.

Targets: *Awareness materials on sustainable use and incentive systems made available to policymakers by 2003; policy framework for natural resource and land use is developed with appropriate incentives by 2005; the National Drought Policy is rigorously implemented by 2010*

STRATEGIC AIM 2.3

CONSERVE AND SUSTAINABLY USE AGRICULTURAL BIODIVERSITY

a Re-introduce wild species into previous range

Agricultural land management including fencing, poor grazing management, and the persecution of perceived predators and competitors of livestock has caused the local extinction of animal and plant species from rangelands throughout Namibia. In most cases, range quality and future land use diversification options can be greatly enhanced through wild species reintroductions.

Targets: *Case studies by landholders of benefits of biodiversity restoration are presented at popular and scientific agricultural fora by 2004*

b Promote genetic diversity in indigenous agricultural crops and livestock

Namibia's plant and animal genetic resources are extremely important to sustainable agricultural development and food security, especially in our harsh, arid environment. The achievement of sustainable agriculture objectives requires full national inventories of livestock breeds and plant genetic resources, the conservation and promotion of indigenous breeds in all farming systems, the production of awareness materials on the benefits of diversifying agricultural production systems, the improved availability of diversified seed and breeding materials to farmers, the on-farm and ex-situ (Chapter 1) conservation of genetic resources through ongoing collection, evaluation, and storage of germplasm, and improved awareness at local, national, and international levels.

Targets: *Full national inventories of livestock and crop genetic resources by 2001 and 2005 respectively; agricultural genetic diversity awareness programme at local, national and international levels by 2005*

c Educate population about the use and risks of genetically modified organisms (GMOs) in agriculture and their effects on food security

In line with strategic aims on alien invasive organisms and the safe use of biotechnology, a public and farmer awareness campaign on the positive and negative effects of GMOs in agriculture is needed. Regular evaluation of the adequacy of national policy and legislation on biosafety is essential (see also Strategic Aim 2.6).

Targets: *Awareness materials for farmers and the public are distributed by 2003*

STRATEGIC AIM 2.4

USE INDIGENOUS KNOWLEDGE SYSTEMS (IKS) FOR SUSTAINABLE MANAGEMENT OF BIODIVERSITY

a Strengthen indigenous natural resource management systems

Nomadic pastoralism and other traditional land management systems represent adaptive management of drylands. Sustainable land use practices based on indigenous knowledge need to guide land use planning. A participatory evaluation of relevant customary laws and practices is needed, as are the establishment of a National Forum on Traditional Knowledge; the integration of IKS in natural resource management policy; the promotion of high-level awareness of the role of indigenous knowledge for sustainable resource use, food security and national development; and the clarification of tenure and use rights over biological resources in different land tenure systems.

Targets: *Indigenous resource management principles are integrated into mainstream management practices at all levels by 2003; National Forum on Traditional Knowledge is established by 2003*

b Protect and promote sustainable use of species used for food and traditional medicine

Traditional healers and other resource users have a vested interest in sustainable use, but may need support to achieve it. This can be fostered by the mainstreaming of healers in the national health system with a code of conduct and registration system, including provisions for sustainable use of medicinal species; the development of a traditional medicine industry, including local research and development of drugs derived from medicinal plants; the establishment of a medicinal plant garden; and the cultivation of wild foods to aid in the diversification of diets and increased food security. Use of products from protected areas should also be considered.

Targets: *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*

STRATEGIC AIM 2.5

PROMOTE AND CONTROL BIOPROSPECTING AND BIOTRADE TO GENERATE SUSTAINABLE BENEFITS FOR NAMIBIA

a Improve national and local capacity to benefit from and control biotrade

Key activities are the development of national scientific facilities and private enterprises to add value to genetic resources; the identification of additional biological resources for potential trade and product development; a baseline study of the current and potential genetic resources industry; the development of local negotiations skills in order to facilitate fair, informed and mutually beneficial agreements; and the promotion of mechanisms for the sustainable economic use of natural resources.

Targets: *All Namibian stakeholders in the development of new biotrade agreements are equipped with relevant negotiations and monitoring skills by 2003; three new value-*

addition enterprises or facilities are established by 2005

b Raise public and political awareness of issues, costs and benefits of biotrade and bioprospecting

This will require information and training on the new policy and legislation at grassroots, NGO, regulatory agency and political levels, using prepared materials; a national workshop to educate stakeholders on intellectual property issues; the assessment of training needs, institutions and candidates for focused training in regulatory, research and community aspects; and the integration of issues into tertiary curricula.

Targets: *Awareness materials are compiled and distributed to target audiences, with the training and information process on the new policy and legislation, by December 2003*

c Promote effective cooperation at relevant levels

There has recently been vastly improved networking on these issues between key stakeholders at national and international levels. This promotes research and development, the harmonization of national frameworks within the SADC region, and regulatory efficiency. Local-level networking needs further emphasis.

Targets: *Namibian legislation on access to genetic resources harmonised with existing SADC frameworks by December 2005; contact established with key research and development institutions by mid-2002*

Namibia has many unusual plants, animals, fungi and micro-organisms with potentially valuable genetic material. At the same time, many Namibians have a widely shared, high level of general knowledge about wild foods, crafts, medicinal plants and other resources. In the past decade, biotechnology, pharmaceutical, agrochemical and cosmetic industries have increased their surveys of wild species as sources of natural biochemical compounds. This 'bioprospecting' has generated a surge of interest in traditional knowledge of biological resources, and an intensified pressure to collect and privatize biological material. When done without the agreement and benefit of local custodians of the knowledge and genetic resources, this is known as 'biopiracy.' In most countries very little legislation is in place, but civil society groups and governments are reacting increasingly strongly. Latin American and Asian communities have refused access to collectors, civil society groups and governments have legally challenged patents, and governments are attempting to monitor and control biopiracy more effectively. Namibia is ahead of many African countries in this respect.

Collaborative trade in biological materials, or 'biotrade,' with industries can generate significant economic benefits to Namibia. If properly controlled, it can be an important element of an integrated sustainable development strategy. Until appropriate policy and watertight legislation are finalised, however, Namibia stands to lose significant revenue from plant, animal, fungal and microbial resources. Just as importantly, rural people, communities and institutes stand to lose from the exploitation of their collective knowledge of these resources.

The issue of access to genetic resources raises the need for the prior informed consent of communities, where they are stakeholders, and the development of contractual agreements where appropriate. Capacity building may be needed to enable communities to participate as equal partners.

STRATEGIC AIM 2.6

ENSURE THE SAFE USE OF BIOTECHNOLOGY IN NAMIBIA

a Implement the National Biosafety Framework

Namibia's National Biosafety Framework was developed through a consultative process as part of this strategic plan. National policy, draft legislation, a country study and comprehensive technical guidelines for the safe use of biotechnology have been developed for Namibia. The legislation establishes a National Biosafety Advisory Council (NBAC) to advise the competent authority on biotechnology matters.

Targets: *Government competent authority is functional by the end of 2002, Biosafety Act is promulgated and the NBAC is established by mid-2003*

b Develop and implement detailed procedures to control the transboundary movement of genetically modified organisms and their products

Procedures need to be developed to support the national policy on core regulatory and administrative processes: notification, information transfer, review, risk assessment, decision-making, and risk management (including monitoring and enforcement).

Targets: *Proposed procedures are agreed upon by relevant parties by end of 2002*

c Implement and enforce technical guidelines for the handling of genetically modified organisms and their products

These guidelines cover general handling, containment procedures, monitoring, disposal, and contingency planning for spillage or accidental release during laboratory use, research and development, field release, and in commercial and industrial applications.

Targets: *A set of technical guidelines is published by end of 2002*

d Establish and equip the necessary regulatory structures

In terms of national legislation, a National Biosafety Inspectorate will be established within the Ministry of Higher Education, Training and Employment Creation as the competent authority. A regulatory framework is detailed in the national policy and legislation.

Targets: *Appropriate structures are in place and staffed with trained personnel by December 2003*

e Strengthen specialist capacity to implement the National Biosafety Framework

Regulatory and advisory staff, including customs officials, environmental impact assessment officials, and members of the Namibian Biotechnology Alliance and the future National Biosafety Advisory Council need to be better equipped to administer and advise on biotechnology applications, transboundary movement, monitoring and risk management. Training (activity **g**) and international exposure will improve capacity. A database of expert advisors and reviewers in the region and worldwide is also proposed.

Targets: *Database/information network is accessible by December 2003; a programme of training exposure visits has commenced by June 2003*

f Raise public and political awareness of issues related to biotechnology

Dissemination of appropriate levels of information through workshops, local media, websites and other mechanisms is needed for effective public and political participation in the issues.

Targets: *A Namibian biosafety webpage is operational by December 2003*

g Implement a concerted technical training programme

Cost-effective tertiary training of Namibians in modern biotechnology and biosafety procedures is urgently needed. Risk assessment training is particularly needed, with reference to other areas of risk assessment and management. Also, in-house awareness modules are needed for personnel in fields such as environmental management, trade, finance, health and agriculture.

Targets: *Biosafety aspects are included in UNAM science curriculum and SADC region capacity programmes by the end of 2002; 15 Namibians are trained in modern biotechnology procedures by end of 2006*

3 Monitoring, Predicting and Coping with Environmental Change & Threats

OBJECTIVE 3

Improve human well-being, livelihood and environmental sustainability in Namibia through better proactive and adaptive management

STRATEGIC AIMS OVERVIEW

3.1 Strengthen national capacity for reliable decisionmaking on the environment and development

3.2 Improve national and local capacity to monitor, detect and predict environmental change

3.3 Develop reliable indicators and monitoring systems of biodiversity and ecosystem function

3.4 Enhance national capacity in biosystematics to support biodiversity management

3.5 Identify and monitor main environmental threats

3.6 Raise awareness and strengthen capacity to adapt to climate change

3.7 Manage and mitigate desertification, and degradation and land conversion

3.8 Reduce the threat to biological diversity from alien invasive species

3.9 Strengthen national and local capacity to manage and reduce pollution

3.10 Develop and apply rehabilitation and restoration methods to degraded ecosystems

STRATEGIC AIM 3.1

STRENGTHEN NATIONAL CAPACITY FOR RELIABLE DECISIONMAKING ON THE ENVIRONMENT & DEVELOPMENT

a **Integrate national information systems and analytical activities related to natural resource management and development planning**

Environmental change must be the focus of integrated environmental information systems. Namibia's State of the Environment Reports will be an effective forum for this integration, supported by regular technical and political workshops on environmental change. Namibia's biodiversity, desertification, climate change and related programmes can feed into such a process. A strong and integrated national policy on open information access is crucial to the successful integration of information.

Targets: *Study on biodiversity indicators for State of the Environment Reports is completed during 2002; first "vital signs" national SOER is completed by 2004*

b **Strengthen mechanisms for political – technical dialogue on environmental change**

Translating sound analysis into effective

action on the ground requires closer dialogue between scientists, economists, social scientists, political decisionmakers and planners. This might be done via a national environmental and scientific advisory council, such as the newly-proposed National Council for Research, Science and Technology.

Targets: *From 2003 a national advisory council meets regularly and includes environmental change issues integrally in its scope*

Environmental change affects us all. In dry environments, where people live closer to the edge of survival and profitability, we must not be caught unprepared for it. Interacting processes already affecting Namibia, and likely to undermine our sustainable development in the future, include climate change, desertification, soil erosion, biodiversity loss, deforestation and other forms of land degradation.

To cope with environmental change, we need modest investments in scientific research and information systems. We also need focused socio-economic research and impact analysis, and effective channels for translating results into action on the ground. Sound science and economics underpin reliable decision making at any time – but particularly in times of change.

STRATEGIC AIM 3.2

IMPROVE NATIONAL AND LOCAL CAPACITY TO MONITOR, DETECT AND PREDICT ENVIRONMENTAL CHANGE

a Establish and implement a functional Environmental Observatories Network of Namibia

Environmental change can be detected by comparing climatic, biophysical, ecological and human impact data obtained at sites over long periods of time. The Environmental Observatories Network of Namibia (EONN) comprises institutions involved in monitoring, storing, and using such long-term data from sites across Namibia. EONN is a working group of the National Biodiversity Task Force.

Targets: *EONN is operational by 2001; a Southern African Environmental Observatories Network meeting is hosted in 2002*

b Identify, promote and facilitate the appropriate operation of monitoring sites

Environmental changes may vary in space and time, and several clusters of sites are needed to detect and describe significant changes. Given limited human and financial resources, it is important to prioritise monitoring activities and strategically locate sites. Two existing observatories are already specified for Namibia: the Gobabeb Training and Research Centre (GTRC) and Etosha Ecological Institute (EEI), and others are developing.

Targets: *Five observatories throughout the country are fully equipped and operational, including GTRC and EEI, by 2005*

c Facilitate environmental monitoring and analyses of long-term and large-scale processes

Institutional capacity and continuity are prerequisites for operating monitoring sites. Close cooperation between institutions operating different sites allows for comparison, and institutional support and networking mechanisms should thus be created.

Targets: *Data collected from the five observatories are shared and processed in form of a publication by 2007*

d Establish, operate and maintain a comprehensive meta-database

Data need to be shared as a reference for other studies at other times and places. A web-based meta-database containing summary information on environmental data is crucial to enable institutions and researchers to obtain and interpret existing data. An EONN data-sharing policy serves as a guideline for institutional information exchange.

Targets: *Meta-database framework is established by EMIN and EONN by 2002*

e Connect EONN to partner networks

Given the small Namibian research community, EONN must link with foreign researchers and networks to increase capacity for processing and interpreting data, which allows for further valuable mentorship/ training opportunities for young Namibian researchers. Long-term and large-scale environmental patterns are also best understood by comparison with continental and global patterns. EONN thus links to the Southern African Environmental Observatories Network, International Long-Term Ecological Research Network, Global Terrestrial, Climate and Ocean Observing Systems, and other global and local programmes.

Targets: Conference of the Southern African Environmental Observatories Network (SAEON) is hosted as a vehicle for strengthening the southern African network in 2002

f Identify and ensure input and collaboration from partners, including local resource managers, decision-makers, researchers and students

Training, outreach, and information exchange are as important for long-term monitoring as is research. Demonstrating the usefulness of long-term data in environmental management will be essential for the fostering of committed partnerships between data suppliers and data users.

Targets: *A cluster of local or regional workshops is conducted by 2005*

STRATEGIC AIM 3.3

DEVELOP RELIABLE INDICATORS AND MONITORING SYSTEMS OF BIODIVERSITY AND ECOSYSTEM FUNCTION

a Review, streamline and where appropriate develop reliable indicators of biodiversity and ecosystem function

Different objectives may require the use of different indicators. Through Namibia's State of the Environment Reporting (SOER) process, EONN, and the Environmental Monitoring and Indicators Network (EMIN), reliable and locally appropriate indicators need to be identified, tested, and refined according to agreed criteria including cost-effectiveness, sensitivity, information value, reliability and repeatability. Terrestrial, freshwater and marine biodiversity and ecosystem function indicators need to be covered.

Targets:The case study from Oshikoto Region on biodiversity and environmental sustainability is finalised in 2002; a biodiversity indicator study for SOER is finalised by 2002; a "vital signs" report is published in 2004

b Design appropriate national, regional and local level monitoring systems of biodiversity and ecosystem function

Monitoring systems that detect changes in biodiversity and ecosystem function, and thus serve as tracking and early warning systems, need to be developed. Such designs must be cost-effective and practical, while providing sound environmental data.

Targets: *A pragmatic terrestrial national-scale biodiversity monitoring programme in support of SOER is designed by 2003*

c Implement monitoring programmes and surveys

Various institutions and ministries will be involved in the implementation of targeted monitoring programmes and surveys. All stakeholders have to be committed to implement these programmes in the long term.

Targets: *Five biodiversity and ecosystem function indicators for terrestrial, freshwater and marine environments are regularly monitored by 2005*

STRATEGIC AIM 3.4

ENHANCE NATIONAL CAPACITY IN BIOSYSTEMATICS TO SUPPORT BIODIVERSITY CONSERVATION MANAGEMENT

a Develop effective mechanisms to enhance collaboration and networking in biosystematics at all levels

The appointment of a national biosystematics coordinator is proposed. This person will liaise with users on their taxonomic support needs, review existing capacity (infrastructure, collections, equipment, human resources), compile a directory of Namibian taxonomic expertise; bring together resources and technologies used for different organisms in support of the overall objective; and prepare a biosystematics country study for the international Global Taxonomy Initiative.

Targets: *A Biosystematics Co-ordinator is appointed by March 2002*

b Solicit financial and training support to improve Namibian biosystematic services

A focused and coordinated training plan, and other proposals for biosystematics capacity building, will be developed in line with the Global Taxonomy Initiative to tap various funding sources.

Targets: *A first funding proposal is secured by 2003*

c Develop and implement procedures to allow focused, cumulative biodiversity inventory work in support of environmental planning

These procedures include the mandating of curation and inventory responsibilities for unallocated taxa; development and maintenance of taxonomic databases incorporating repatriated data; identification of knowledge gaps; prioritization of target taxa, sampling needs and timeframes; clarification of protocols for processing material; undertaking of multiple site/ taxon collecting and monitoring; support of continued and improved curation of specimen collections; and support of ongoing programmes of biosystematic research so that species and other taxa can be delimited and understood by users.

Targets: *A concerted national programme of inventory work is in place by 2004*

Biosystematics (often called taxonomy) is a fundamental building block for sustainable use and conservation of biodiversity. Science assumes a certain 'order in the universe' of species and other taxa - an accepted system for defining and naming them. Without adequate access to capacity in biosystematics, Namibia cannot adequately understand and protect its species and implement the Convention on Biological Diversity. However, the line needs to be drawn between what capacity Namibia can realistically expect to maintain locally, and what needs to be accessed internationally.

Parataxonomy and "folk taxonomy" refer to easily applicable systematic systems, which may not be based on purely scientific "rules," but allow for an effective way of creating inventories of species.

STRATEGIC AIM 3.5

IDENTIFY AND MONITOR MAIN ENVIRONMENTAL THREATS

a Build national consensus on a refined priority list of threats to sustainable development and environmental health, especially biodiversity

The most pressing environmental threats to Namibia need to be identified and agreed upon by technical experts so that research and management efforts as well as resources can be focused on these issues. This is also important to Namibia's State of the Environment Reporting programme, which aims to monitor the extent and dynamics of these threats to provide guidelines for national management of natural resources.

Targets: *A first priority list of threats is agreed in 2001 (see example in text box opposite)*

b Ensure these threats are adequately reflected in core national biodiversity and environmental indicators and monitoring processes

Relevant indicators to monitor the environmental threats need to be developed and tested for efficiency, sensitivity and practical usability. Once a core set of indicators has been defined, long-term monitoring programmes can be established.

Targets: *With other partners of EMIN and EONN, the National Biodiversity Programme and the State of the Environment Reporting Project develop harmonized key indicators and a monitoring programme by 2003; the first full State of the Environment Report on biodiversity is finalized by 2004*

c Ensure interactive information flow with decisionmakers on these threats and indicators

Environmental threats can seriously undermine national development, so there is a need for efficient communication between environmental specialists and decisionmakers. State of the Environment Reports, drawing on partnerships with many key collaborators, are one tool to communicate and regularly update information on trends in natural resources. Key findings and recommendations need to be communicated to senior decisionmakers and managers for urgent action.

Targets: *Permanent Secretary roundtable briefings on the state of environment and environmental threats are held three times a year from 2003*

STRATEGIC AIM 3.6

RAISE AWARENESS AND STRENGTHEN CAPACITY TO ADAPT TO CLIMATE CHANGE

EXAMPLE

Key threats to agricultural biodiversity, and threats to biodiversity by agriculture

LANDSCAPE LEVEL

- Bush encroachment
- Land clearing, conversion and inappropriate land-use practices, e.g. monoculture cropping
- Poor water and land management, e.g. soil erosion
- Harmful pest management practices and careless use of agrochemicals
- Inappropriate use of fences on both freehold and communal land
- Harmful wildlife management practices on farmland
- Socioeconomic policies not conducive to biodiversity conservation

SPECIES LEVEL

- Impacts of land clearing, cropping and grazing on almost all native species
- Harmful pest management practices and careless use of agrochemicals
- Uncontrolled import and export of plant material

GENETIC LEVEL

- Use of untested introduced varieties instead of locally adapted or endemic varieties
- Genetic pollution through hybridization with imported relatives
- Potential ecological impacts of genetically modified organisms (GMOs) on non-target species

a Synthesize relevant information and scenarios from other sources

Much information on climate change (CC) and its potential impacts on biological diversity is available from other countries. Information relevant to Namibia needs to be synthesized, reviewed, updated and applied to the Namibian context. It is clear that Namibia is highly vulnerable to the effects of CC, but scenarios of its full impact on biodiversity have yet to be established.

Targets: *Namibia's Initial National Communication to the UN Framework Convention on Climate Change is submitted by July 2002*

b Commission analyses of biodiversity impacts in Namibia with appropriate partners

In a country as arid and variable in climate as Namibia, species distributions are affected by changes in temperature, rainfall and other climate patterns. Species that are today confined to areas of relatively high rainfall and lower temperatures may be lost. Species adapted to lower rainfall and higher temperatures may increase their ranges. This may drastically affect humans, domestic stock and wildlife. The NBP needs to support the National

Climate Change Committee (NCCC) with data and scenarios for Namibia.

Targets: *Namibia's first national communication on CC identifies main areas of impact by July 2002; CC impacts on Namibian terrestrial ecosystem boundaries and species distributions are preliminarily analyzed by April 2003*

c Design and implement an appropriate awareness programme based on summary information for target audiences in consultation with stakeholders

Climate change awareness programmes elsewhere mainly focus on pollution emissions. Namibia is mainly vulnerable to CC caused elsewhere in the world, and should develop a tailored awareness and action programme focusing on vulnerability to CC through impacts on agriculture, food security, health and biodiversity. A main impact may be changes to the Benguela Current, which drives the resource-rich marine ecosystem and fisheries of Namibia. Senior decisionmakers need to be well informed about the liability of those countries that primarily cause CC and the extent of Namibia's vulnerability. The NBP should support focused actions on biodiversity related aspects.

Targets: *An information brochure on the vulnerability of Namibia to CC and potential mitigation strategies is available to key decisionmakers by 2003*

d Identify human and institutional capacity needs

The implementation of climate change targeted activities requires appropriate staffing and strong institutional capacities to be able to handle this very important threat to Namibia. Currently capacity a national capacity self-assessment (NCSA) is being planned for that would allow to identify human and capacity needs for the implementation of the various environmental conventions including the FCCC.

Targets:*The NCSA is underway by August 2002 and gaps are identified by January 2004.*

e Integrate climate change monitoring and research needs in the design and planning of EONN sites

Climate change and its impacts on Namibia's natural resource base have to be analyzed and monitored to better understand their dynamics. Such monitoring programmes serve as effective early warning systems, indicating critical changes and therefore enabling some pre-emptive management actions. The established Environmental Observatories Network of Namibia sites can help serve in monitoring CC.

Targets: *Indicators of CC are monitored at five EONN sites by 2005*

f Focus research and management planning on climate change impacts on vulnerable species and areas

Research on and management of CC impacts on agriculture, fisheries, health, food security and environmental degradation are priorities. Namibia's biodiversity hotspots, the Namib escarpment and Sperrgebiet, need attention and funds to implement CC-sensitive management plans.

Targets: *A map of biodiversity priority areas is produced, with at least three relevant CC monitoring and research programmes implemented at these sites, by 2006*

g **Make results and recommendations regularly available to stakeholders and decisionmakers through appropriate media**

Relevant results from CC research have to be made available to decisionmakers. Mitigation procedures need to be communicated to natural resource users and managers to prepare for the long-term effects of CC.

Targets: *Environmental 'Update' briefing sheets focusing on CC and biodiversity issues are distributed to Parliament by DRFN at least once yearly by 2003; a pamphlet on strategies to mitigate the effects of CC is distributed to natural resource users by 2004*

Africa is the continent most seriously vulnerable to the effects of global climate change. As one of its driest nations, Namibia is regarded as one of the world's most vulnerable. Diversification of the economy and rural livelihoods are central to the strategies we must adopt in order to cope with climate change on a human level, to avoid worsening the effects of desertification, biodiversity loss, and increased unpredictability of resource production in the land, freshwater, and marine environments.

However, climate change will not only affect humans but also the range of other species with which we share our environment. Integrated planning and implementation of national programmes on climate change, biodiversity conservation, desertification, climate change, wetland management and resource management will be essential to predict and mitigate these changes. Streamlining these programmes into national development planning is crucial for Namibia's future.

STRATEGIC AIM 3.7

MANAGE AND MITIGATE DESERTIFICATION, LAND DEGRADATION AND LAND CONVERSION

a **Develop indicators and national overview of the extent of desertification in Namibia**

The actual extent of the threat of desertification in Namibia is still to be established. Desertification, like other forms of land degradation, can reflect a serious loss of biodiversity. The loss of biodiversity in turn impairs the ability of ecosystems to function, and of people to make a living from the land. The links between desertification and biodiversity loss in arid environments need to be examined more closely.

Targets: *A national overview map and indicators of desertification are developed by 2002*

b **Develop local level indicators of desertification, and participatory, community-based monitoring systems (environmental and socio-economic)**

On a local level, natural resource users have to be enabled to assess and monitor the state of the environment themselves, serving as a basis for adaptive management (see also chapter 2). Effective and user-friendly monitoring systems have to be put into place. Biodiversity indicators, such as changes in rangeland species composition, are an early warning of changes in the environment and are relatively easy to identify.

Targets: *A local-level environmental monitoring kit for farmers is developed and tested by 2004*

c Strengthen the capacity of community-based organizations (CBOs) to manage the natural resource base, their livelihoods and effects of desertification more effectively

Primary responsibility and authority to manage natural resources should rest directly with resource users (chapters 2 and 7). Much effort is needed to enable local people to manage their resources sustainably. Strengthened management structures, especially in communally managed areas, are a key to sustainable development and environmental sustainability. Effective land use planning can be facilitated through modern tools such as geographic information systems and analytical decision-support systems.

Targets: *At a minimum of four pilot sites, community-based organizations are empowered through the National Programme to Combat Desertification to manage their resources to mitigate the effects of desertification by 2004*

d Strengthen the capacity of service organizations (SOs) to provide a better service to natural resource users in helping to mitigate the effects of desertification

A major constraint to more effective management of the natural resource base in rural areas is the inefficient provision of support services, for example by agricultural services providers. Extension officers and others should be made aware of the importance of farming with drought-resistant varieties, and should provide diverse seeds and breeding material, especially in remote rural areas, to counter effects of environmental degradation. Services need to be especially targeted to the needs of the most vulnerable groups of natural resource users.

Targets: *Regular information exchange between commercial service providers, development agencies and resource users is established through networks such as the Counterpart Network of Napcod, Namibia's Association of CBNRM Service Organisations, and local and regional government planning and management fora by 2003*

e Harmonise the policy framework affecting sustainable natural resource management.

Policy streamlining and review have been identified as important ways to facilitate sustainable natural resource management (chapter 7). In 1996, Namibia's Programme to Combat Desertification commissioned a review of policies that would affect the successful combating of desertification. It is essential that the recommendations of this analysis are put into practice and augmented with other biodiversity concerns.

Targets: *Napcod policy document is reviewed and biodiversity related loopholes are identified and integrated into policy action plan (chapter 7) by 2003*

STRATEGIC AIM 3.8

REDUCE THE THREAT TO BIOLOGICAL DIVERSITY FROM INVASIVE ALIEN SPECIES

a Review and categorise information on invasive alien species known in Namibia

Current databases and literature in Namibia and the region need review, collation and synthesis in order to identify gaps and prioritise projects. This will assist in the selection of indicator species, the identification of sources of invasive aliens, and appropriate means of control.

Targets: *Detailed country study on invasive alien species in Namibia, including prioritised lists of problem plants, insects, mammals and other taxa, is published by 2003*

b Establish an ongoing database and atlas on plant and animal invasive aliens

An atlas project for invasive alien species is needed, focusing on distribution and abundance and filling gaps through the use of volunteer atlassers. The project would develop an interactive database to generate feedback to farmers, land managers, planners and others.

Targets: A comprehensive data base framework with existing data is established by 2002, with at least 1500 new atlas records per year from across the country until 2008

c Research the invasiveness of selected species, the impact on livelihood security and potential mitigation strategies

Focused research from Namibia and elsewhere is needed on selected invasive alien species, including their spread, sources, invasiveness, and environmental impacts.

Targets: *Research recommendations on control of the top 50% priority plant, insect and mammal species are taken up by implementing agencies by 2008*

d Establish policy, legislation and control measures for invasive aliens, and strengthen regulatory capacity

Policies and regulations need development or revision, implementation, enforcement, and harmonisation through the Southern African Development Community in order to promote improved management. Phytosanitary, customs and field control units need considerable strengthening.

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*

e Promote public awareness of the ecological and economic threat posed by invasive alien species

The threat posed by invasive aliens to biodiversity and water supply should be a recurring theme in display material such as Namibia's annual "Art for the Earth" competition for young schoolchildren, and the subject of posters and brochures at schools, border posts and police stations. Tertiary curricula need to be updated to include this issue, and short courses for horticulturalists and customs officials offered.

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*

f **Initiate and test appropriate, low-impact control projects for problem invasive aliens**

The cost-effective control of invasives must not be more harmful to the environment than the species themselves.

Control measures used in other areas need careful assessment of impacts and effectiveness in local conditions.

Targets: *Pilot experimental control projects for top-priority invasive alien species are established by 2004*

STRATEGIC AIM 3.9

STRENGTHEN NATIONAL AND LOCAL CAPACITY TO MANAGE AND REDUCE POLLUTION

a **Identify geographic and thematic 'pollution hotspots' with serious biodiversity impacts**

Pollution of terrestrial, freshwater and marine ecosystems can have serious impacts on biodiversity. Relatively little is known about the effects of chemicals that are widely used in agriculture, health and other sectors. Areas of high pollution threat need to be identified so that targeted interventions can be planned.

Targets: *A national overview map indicating areas threatened by pollution of different kinds is available to decisionmakers and planners by 2004*

b **Develop participatory mechanisms for reducing pollution at source**

It is much easier and cheaper to prevent pollution than to mitigate its effects once it occurs. Pollution impacts, especially on biodiversity, are often expensive or impossible to reverse, so it is essential to reduce and avoid pollution at the source. All stakeholders have to be involved and develop a sense of responsibility to avoid and reduce the risks of pollution. The rigorous enactment and enforcement of Namibia's Integrated Pollution and Waste Management Bill and Environmental Management Bill will greatly help to reduce the risk of pollution.

Targets: *The Integrated Pollution and Waste Management Bill and Environmental Management Bill are both promulgated, with staff positions filled, by December 2002*

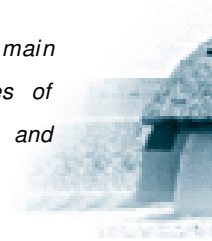
STRATEGIC AIM 3.10

DEVELOP AND APPLY APPROPRIATE REHABILITATION AND RESTORATION METHODS TO DEGRADED ECOSYSTEMS

a **Assess the disturbance or degradation status of habitat units and land use categories**

Degraded ecosystems, which suffer from a serious loss of biodiversity, can perhaps never be totally restored to their natural state, but attempts at rehabilitation can be made. It is essential to understand the key landscape, ecological and socio-economic processes, to gauge the level and causes of disturbance. Such baseline information is needed to define the appropriate restoration goal and most efficient methods to restore ecosystem function.

Targets: *Key landscape processes for main habitat units and land use categories of Namibia are available as a map and accompanying brochure by 2004*



4 Sustainable Land Management

OBJECTIVE 4

Strengthen the implementation of the Constitution (Article 95 L) by adopting measures improving the protection and sustainable use of terrestrial (land) ecosystems, their biological diversity and essential ecological processes.

b Investigate and develop appropriate restoration and rehabilitation methodologies for natural resource managers

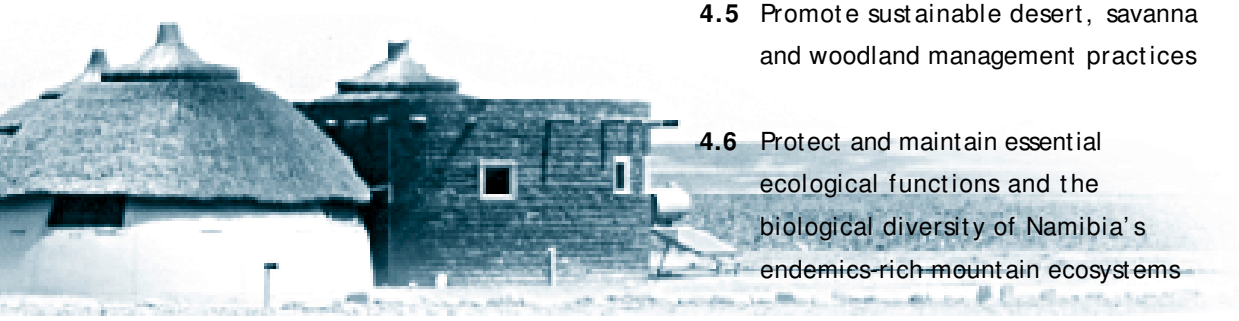
Natural resource users and managers need to be able to apply restoration and rehabilitation procedures. Methods appropriate to a specific impact and environment have to be identified, communicated and where necessary explicitly adapted to Namibia's very arid and variable environment, its socio-economic profile, and low-resource inputs, especially in communally managed areas.

Targets: *A comprehensive handbook on suitable restoration and rehabilitation methods is accessible to a broad readership, if necessary in various languages, by 2005*

c Develop policy and legislative incentives for sustainable biodiversity management, including restoration and rehabilitation

Natural resource users must be responsible for the implementation of rehabilitation and restoration measures on their ground to keep the land and resources productive. Policy and legislative incentives can foster an enabling environment, encouraging sustainable management of resources (see also chapters 2 and 7).

Targets: *The concept of incentives for ecosystem restoration is included in an integrated policy framework for sustainable environmental management by 2005*



STRATEGIC AIMS OVERVIEW

4.1 Strengthen capacity to provide environmental information and policy advice to guide land use planning and the land reform process

4.2 Identify and promote biodiversity-compatible land and resource uses and management systems

4.3 Manage biological diversity in agriculture through the adoption of ecologically, economically and socially sustainable agricultural practices

4.4 Promote sustainable forest management practices

4.5 Promote sustainable desert, savanna and woodland management practices

4.6 Protect and maintain essential ecological functions and the biological diversity of Namibia's endemics-rich mountain ecosystems

STRATEGIC AIM 4.1

STRENGTHEN CAPACITY TO PROVIDE ENVIRONMENTAL INFORMATION AND POLICY ADVICE TO GUIDE LAND USE PLANNING AND LAND REFORM

a Evaluate policy impacts of biodiversity conservation issues in different land management categories

In line with chapters 1 and 2, which urge a thorough scientific analysis of the role of Namibia's different land management systems in conserving biodiversity, policy implications for land use planning at bioregional and local levels need careful consideration. This is urgently needed to guide land use planning and the land reform process in a socio-economically and environmentally sustainable way.

Targets: *A guide illustrating positive and negative biodiversity/ environmental impacts of various land uses is compiled and distributed to decisionmakers and practitioners by 2006*

b Facilitate widespread public and political dialogue on land reform and the environment

The fundamental importance of the land reform process to Namibia's future development, and its political sensitivity, require it to be carried out in a climate of widespread and open debate, with ready availability of key information on all aspects of the issue.

Targets: *Two Permanent Secretaries' Round-table meetings are conducted and one 'Update' briefing sheet for Parliamentarians is produced on these issues by 2003*

Land is a critical resource, and hence a socio-economic and political issue, in Namibia, as elsewhere in the world. Major inequalities and injustices of the past have contributed heavily to the economic marginalisation of many Namibians, and need setting right as a matter of great urgency.

How can land use planning and the land reform process in Namibia take place in a way that is not only socially just in the short term, but also environmentally and socially sustainable in the long term, and based on sound science? Namibia's arid lands and marginal soils render most of the country unable to support significant human densities, and much of the west of the country is completely unsuitable for agriculture of any kind. Vast areas which were probably managed sustainably for centuries by nomadic pastoralists are now prone to degradation under the pressure of settled communities and higher population densities. Settlement itself poses serious challenges to environmental management in dry lands.

Apart from current pressures, Namibia as a dry country has to look ahead to the future. Environmental change will occur under increased human population pressure and the effects of climate change. Such changes will affect marginalised people in arid areas first, and worst. To avoid entering a downward "poverty spiral" of environmental degradation, poverty and dependency in rural Namibia, it is essential that we act to anticipate, and work with, these changes by promoting a variety of appropriate options for rural people to make a living.

STRATEGIC AIM 4.2

IDENTIFY AND PROMOTE BIODIVERSITY-COMPATIBLE LAND AND RESOURCE USES AND MANAGEMENT SYSTEMS

a Broaden the use of bioregional and catchment management

Namibia's river catchments have already been mapped, and catchment planning is slowly gaining ground as provided for in the Water Act. Continued planning based on political and administrative units should be carefully integrated with bioregional and catchment planning. The confidence and capacity of planners and implementing agencies will depend on a clear understanding of the approach and a good grasp of its pros and cons. Collaboration with national water planners to integrate catchment-specific biodiversity data into decision-making for sustainable water supply is important.

Targets: *A peer-reviewed, integrated bio-regional and catchment map of Namibia is prepared and distributed to relevant government offices and other bodies by 2003; three bioregional and catchment planning training courses are successfully run by 2004*

b Promote integrated landscape planning including sustainable agricultural areas around protected areas as hubs of development

Protected areas should not be seen as isolated systems, but as hubs of environmentally sustainable economic development. Buffer zones around park areas could be developed for tourism-related activities or integrated wildlife and livestock production. Many conservancies and commercial farms are mixed livestock and game management areas. Ministries such as MLRR, MET, MAWRD, and MLRGH can achieve excellent integration of sustainable development aims through collaborative planning.

Targets: *Integrated strategic plans for regions surrounding two protected areas are publicized in 2003*

c Investigate and promote tourism potential in support of biodiversity and landscape conservation

Ecotourism and community-based tourism development have been identified as economically rewarding vehicles to support landscape and biodiversity conservation. Future expansion potential, bioregional carrying capacity and real-term benefits need investigation, and innovative developments should be supported.

Targets: *The impacts of three new large-scale tourism enterprises on the environment and development of nearby communities are analysed and published by 2008*

d Identify and reduce or remove policy impediments to sustainable land management

The land sector in Namibia still operates in a contradictory and not always needs-driven policy framework, which needs urgent streamlining. To achieve environmental and socio-economic sustainability, land rights and rights to other biological resources need to be clarified (see chapters 2 and 7).

Targets: *The Communal Land Bill is promulgated by 2004; contradictory legislation on natural resource access rights is harmonized by 2004*

Development planning and resource management frequently prove to be unsustainable or unsuitable when they are done in a piecemeal way. Effective biodiversity conservation often requires integrated planning and management, based on bioregional (biome-specific) or catchment units. This is especially true of arid rangelands and savannas, which are usually much larger than the political or economic units used for planning and management.

STRATEGIC AIM 4.3

MANAGE BIOLOGICAL DIVERSITY IN AGRICULTURE THROUGH THE ADOPTION OF ECOLOGICALLY, ECONOMICALLY AND SOCIALLY SUSTAINABLE AGRICULTURAL PRACTICES

a Strengthen measures to conserve water and soil resources

Water-efficient agricultural practices must be identified and promoted; positive incentives for water and soil conservation need to be formulated and promoted, with perverse incentives removed. The number and size of farm dams needs strict regulation and enforcement to ensure that restrictions on river flow do not jeopardize ecological requirements.

Targets: *The Namibian Soil Network develops a focal group on soil biodiversity by 2002; lessons learned from current catchment management projects, e.g. DRFN's Kuiseb catchment project are documented and communicated to practitioners and decisionmakers by 2006*

b Quantify and prioritise issues, areas, and needs relating to destructive land conversion, clearing and management practices

This requires approaches at different scales, including time-series national and local satellite image analyses; the compilation, analysis and ground-truthing of existing data; and the design and establishment of long-term ecological research (LTER) sites in priority areas to quantify biodiversity impacts. Related to these approaches are an inventory of existing biodiversity at focal sites, identification and implementation of recovery plans for threatened species at such sites, and the promotion of lessons learned among farming communities.

Targets: *A focused study of farming systems compatible with biodiversity conservation is initiated in 2003*

c Enact and apply the Environmental Management Act to farming systems

Negligent or destructive practices need to be identified, and the Act enforced where needed. Small farmers need policy and financial assistance to limit land conversion. Policy solutions need to be identified, initiated, and brought into line with enforcement practices.

Targets: *The Environmental Management Act is promulgated by December 2002*

d Establish and enforce environmentally appropriate policy on agricultural fencing

Fences have often had a highly detrimental impact on the migratory and opportunistic movements of animals. Analysis and publication of the impacts of fencing on biodiversity are needed, as are the identification and implementation of improvement measures. The potentially negative impacts of agricultural fencing in communal areas have to be determined.

Targets: *Appropriate sections on agricultural fencing are included in the Communal Land Bill, currently under redrafting and potentially finalized in 2004*

e Manage bush encroachment

The prevention of further bush encroachment involves experimental and historical studies to clarify the causes of encroachment; the definition of desirable management states for biodiversity and agricultural value; and the adaptation and expansion of the MAWRD's extension programme for farmers and other land-holders to discuss and implement findings. National and local management goals need careful articulation to balance the sometimes conflicting interests of agri-cultural and charcoal production, carbon sequestration, and biodiversity conservation. Establishment of current markets and mark-eting channels, surveys of market demands, and the identification and establishment of new marketing channels for products of bush clearing are all proposed.

The reduction of the current area of bush encroachment requires us to identify target areas where bush clearance is possible and desirable, analyze biodiversity impacts of bush clearing methods, selectively clear target areas with low-impact, appropriate methods, and reintroduce species lost through encroachment (ecological restoration).

Targets: *An overview study of the increase/ decrease and dynamics of bush-encroachment based on longterm data is completed by 2006*

f Lessen the frequency and negative impacts of uncontrolled veld fires on biodiversity

Focused studies on the biodiversity impacts of frequent uncontrolled fires on different vegetation types, awareness campaigns to sensitize rural people to the dangers of too frequent veld fires, training of farmers on preventative measures and adaptive use of fire for sustainable veld management are needed.

Targets: *A field study elucidating the effect of frequent veld fires on biodiversity and soil fertility in Namibia's north-eastern regions is completed in 2007; relevant information brochures are published and disseminated to local resource users by 2008*

Veld fires do not only occur on agricultural land, but since farmland occupies up to 85% of Namibia's land surface, agricultural management is central to wise fire management. Fire is a powerful evolutionary force in maintaining African savannas and their biological diversity, but its frequency appears to have increased significantly in the last few centuries of human occupation, especially the last fifty years under increasing population pressure. This is feared to have serious impacts on biological diversity, especially in Namibia's moist northeast woodlands and forests. Focused research is urgently needed on these impacts.

g Investigate and implement wider use of integrated pest management

The establishment of an Integrated Pest Management Unit in the Ministry of Agriculture is proposed. This involves training, identification, implementation and popularization of case studies, as well as focused research and management.

Targets: *The Integrated Pest Management Unit is fully operational and resourced by 2005*

h Establish a database on desirable alien organisms

To complement the focus of Strategic Aim 3.7, a database on 'agriculturally desirable' alien species is proposed. This will require the review of literature and current records, the listing and mapping of desirable alien species, and the publication of annual newsletters.

Targets: *A comprehensive report on alien species of potential agricultural and economic value, including extensive environmental assessment, is completed by 2007*

i Define and implement sustainable agricultural practices

In line with activities identified in this chapter and chapter 1 on the analysis of land management systems, a concerted public dialogue is needed to help identify best practices for sustainable agriculture. Once sustainable practices for different regions of Namibia have been defined, policies and incentives need evaluation, and perverse incentives need removal, runoff and topsoil management measures need strengthening, and available land use maps and data need integration. Committed government assistance will be required for extension and, in some cases, financial support for farmers improving their management practices.

Targets: *A booklet on innovative practices in environmentally sustainable management and biodiversity conservation is published by the end of 2006*

j Review socioeconomic and agricultural policies impacting on biodiversity conservation

Revise existing policies to improve their compatibility with biodiversity conservation aims and implement them, including raising farmer awareness of changes through extension services.

Targets: *All newly developed policies integrate principles outlined in this strategy once approved by Cabinet; an evaluation of the impacts of this strategy on policy development is conducted by 2008*

Agriculture as a fundamental human activity has two sorts of interactions with biodiversity - positive (through sustainable farming practices, wise landscape management, and the conservation and use of locally adapted varieties and breeds) and negative (through destructive clearing and farm management practices, which can have serious impacts on biodiversity).

The goal is to achieve conservation of biological diversity in agriculture through the adoption of ecologically, economically and socially sustainable agricultural practices, thereby safe-guarding economic development and household food security.

Due partly to sound management practices by many Namibian farmers, and partly to our country's aridity, our biodiversity is probably much better conserved on agricultural land than in many countries. Several improvements can make Namibia a real world leader in this field, even with increased human populations.

Finally, the conservation of agricultural genetic diversity, such as locally adapted crops, livestock, and their wild relatives, is one of the most effective ways of improving national and global food security.

STRATEGIC AIM 4.4

PROMOTE SUSTAINABLE FOREST MANAGEMENT PRACTICES

a Streamline legislation, enforcement and procedures for forest biodiversity conservation

Relevant policy and legal instruments for sustainable forest management need greater harmony and streamlining with instruments relating to other natural resource sectors to become highly effective. Efficient enforcement and reporting procedures are essential, involving all categories of law enforcement officer, including community-based honourary forest officers.

Targets: *A proposal for regulatory structure and processes is drafted by December 2002*

b Establish interim, fast-track forest preservation and management areas

For this, three processes are needed, in line with bioregional and catchment planning –

- ***Strict enforcement of the Preservation of Trees and Forests Ordinance (37 of 1952) and the draft Forest Bill (2000) near rivers and on dunes.***

These are good pieces of legislation, but need tougher enforcement measures and in some cases increased fines.

- ***Negotiation of regional forest and/ or conservancy agreements with landholders.***

Landholders on freehold and communally managed land play a powerful role in resource management, as already demonstrated by freehold and communal area conservancies. Where forests can be integrated as part of conservancies, they should be. In certain areas, watershed management or community resource needs should justify the negotiation of forest agreements at a regional (catchment, bioregional or district) level.

- ***Development of procedures for more effective local and regional management.***

Regional management, particularly catchment management, offers major opportunities and teething problems for resource managers. Widely-consulted procedures need careful development at local and regional levels.

Targets: *Strategy paper for forest conservation areas is consultatively developed by 2003*

c Develop appropriate units and management systems for forest conservation

This requires the development of consistent conservation units and management systems, the development of "off-reserve" management categories, and the development of mechanisms to incorporate ecological and economic values and functions of conservation areas. This will involve integration and streamlining with other Directorates of the Ministry of Environment and Tourism.

Targets: *At least three units in each political region are in place by 2004*

d Develop guidelines for forest biodiversity data analysis

These activities include development of a user-friendly spatial analysis interface for the National Forest Inventory Project (NFIP) and Namibian Tree Atlas Project (TAP) databases; collation and review of

relevant analytical methods and case studies, and testing of different options for biodiversity assessment and data analysis.

Targets: *Data from all regions covered by NFIP are published by 2003; NFIP and TAP databases are fully operational and documented by 2004*

e Assess forest biodiversity trends and patterns

Initially this involves providing additional logistic support to the NFIP, then identifying and targeting gaps not covered by it, the TAP, Vegetation Cover Project, Environmental Profiles and other projects.

Targets: *A gap analysis and a plan to fill gaps are completed by December 2002*

f Establish and initiate collection of data on forest biodiversity indicators

At national level, this requires the selection of appropriate remotely sensed indicators; at local level, it needs testing or monitoring of the following categories of indicators: landscape function analysis, community-identified natural resource management indicators, disturbance indicators, status of forest-dependent species, and forest structure and heterogeneity. A process to identify indicators is already underway within the Directorate of Forestry.

Targets: *Indicators are agreed upon by 2002 and streamlined with National Biodiversity Programme and State of the Environment Report indicators by 2004*

g Develop conservation management criteria and guidelines

In line with Chapter 1, it is important to reassess the protected area network with respect to the representation of forest types and specific areas under threat; to provide biodiversity input to management plans; to declare buffer zones, corridors and zonation; to develop site-specific forest management plans; and to develop consultative fire management plans for forests in fire-prone areas. Off-reserve management will involve the negotiation of agreements with landholders and incentives for forest biodiversity-friendly management, and the negotiation and gazetting of declarations under the Mountain Catchment Area Act.

Targets: *Forest areas are included into systematic biodiversity prioritization analysis by 2002*

h Facilitate community participation in planning, design and management of forest biodiversity conservation initiatives

The establishment of a Community Liaison Officer for each district within MET, and Forestry Councils outside of conservancies and other classified areas, are proposed. These staff and bodies should network with appropriate non-governmental organizations active in natural resource management and rural development.

Targets: *60%of all planned Community Liaison Officer posts are filled with technically qualified personnel by 2004*

i Establish, facilitate and evaluate relevant research and monitoring programmes

Other research is needed on socially and economically acceptable alternatives to excessively used forest products, such as fencing materials. As part of the integrated monitoring of environmental change recommended in chapter 3, it is important to develop appropriate procedures for monitoring forest cover change; fire impacts on forest diversity and processes; the effectiveness of management strategies; and other aspects of forest biodiversity in relation to environmental change.

Targets: *A strategic plan for the implementation of the highest priority research and monitoring programmes is developed and agreed by 2003*

j Create awareness about the importance of forest biodiversity in rural and national development

Active mechanisms for instilling the importance of forest biodiversity in schools and communities need to be integrated into broader awareness initiatives (chapter 9). A pamphlet on biodiversity conservation funding sources for government agencies and NGOs may assist in the initiation of small and medium projects.

Targets: *A brochure on non-timber products and the ecological role of forests is produced for schools and other target groups by 2002*

STRATEGIC AIM 4.5

PROMOTE SUSTAINABLE DESERT, SAVANNA AND WOODLAND MANAGEMENT PRACTICES

PART B

a Develop and implement integrated and intersectoral policy framework for sustainable natural resource management and biodiversity conservation

The importance of developing an integrated and streamlined policy framework has been raised in several sections (chapters 1, 2, 3, & 7). This is especially important for Namibia's desert, savanna and woodland biomes, which are very unequally reflected in such frameworks. Most of the savanna and woodland biomes are used for agricultural production, including livestock and game farms. Sustainable natural resource management and biodiversity conservation are fairly new and modern concepts that still need to find their way into much of land use planning.

Targets: *An implementation plan for the strategic framework is developed and agreed by all stakeholders by 2003*

b Evaluate impacts on the natural resource base, ecological processes and biodiversity of different land-uses and management systems

This assessment is called for elsewhere (chapters 1, 2, 3 and this chapter), with an emphasis here on severely under-represented biomes of great land use value. It will be important to weigh up long-term sustainable management against short-term economic gains by a few persons.

Targets: *A funding proposal for this undertaking is completed by 2002*

c Establish a comprehensive monitoring and inventory information system

Together with the Environmental Monitoring and Indicators Network (EMIN), the Environmental Observatory Network Namibia (EONN) and their member institutions, an Environmental Information Systems (EIS) Unit at the Directorate of Environmental Affairs of MET needs further development so that information can be easily integrated and fed into this central system.

Targets: *The EIS Unit at DEA provides an interactive metadatabase platform for easy data exchange and storage by 2002*

d Expand the protected area network

As emphasized in chapter 1, the current protected area network under-represents Namibia's karoo, savanna and woodland biomes, which need greater protection in and outside of formal conservation areas to meet national policy targets.

Targets: *Unless revised through a systematic analysis, at least 15%of each vegetation type, with greater representation of biodiversity hotspots, is integrated into the national protected area network by 2006 (Strategic Aim 1.1)*

e Promote expansion of appropriate models of sustainable natural resource management and biodiversity protection

Semi-arid and arid biomes need very careful adaptive management. Adaptation of environmentally sound traditional land use practices based on indigenous knowledge need to be elaborated. This involves the promotion of integrated and participatory land-use planning at all levels and the identification of opportunities for transboundary collaboration across shared ecosystems. Appropriate land uses for Namibia's vast and sensitive desert areas need to be developed. The Namib Desert and Succulent Karoo with their many endemic plant and animal species have high biodiversity value and are national assets. Sustainable agricultural practices should only be considered in appropriate areas (Strategic Aim 4.3 i).

Targets: *Land uses in desert, savanna and woodland biomes are incorporated into biodiversity impact analysis by 2006; a popular booklet on sustainable land uses in these biomes is published by 2006*

STRATEGIC AIM 4.6

PROTECT AND MAINTAIN ESSENTIAL ECOLOGICAL FUNCTIONS AND THE BIOLOGICAL DIVERSITY OF NAMIBIA'S ENDEMICS-RICH MOUNTAIN ECOSYSTEMS

a Rank quantitatively our state of knowledge of Namibian mountain ranges and inselbergs

Namibia's mountain ecosystems are one of the most valuable for biodiversity conservation, but too little information on their physical and biological traits is available to feed into management planning. The information base needs to be further developed. The Environmental Observatories Network of Namibia (EONN) through its national system of long-term research sites must also cover these ecosystems.

Targets: *Prioritized list of mountains is targeted for in-depth studies and a potential EONN site is identified by 2002*

b Elaborate a research and monitoring framework

In a collaborative manner a priority research and management framework for the protection of mountain ecosystems should be developed, based on principles of this document.

Targets: *A research and management framework is drafted and agreed by May 2003*

c Implement inventory and ecological process research on biodiversity in identified priority mountain areas

A rigorous research framework must be implemented to collect baseline data on biodiversity and ecosystem function. Inventory and monitoring of poorly known taxa, landscape ecological processes of mountains and surrounding plains; potential impacts of climate change (chapter 3); and population dynamics of endemics and species of conservation value should be covered.

Targets: *A popular booklet and a series of scientific papers on Namibia's mountain ecosystems is published by 2005*

d Understand biogeographic status of Namibian mountains

Emphasis should be on biogeographic studies to allow for broader interpretation of case study data collected at priority sites. Biogeographic studies of the distribution of species of interest are important for conservation planning.

Targets: *Results are included in above publications by 2005*

e Assess patterns of endemism on mountains

Priority research should focus on endemic species, which only occur in Namibia and may often have highly restricted ranges, specific to one mountain.

Targets: *Results are included in above publications by 2005*

f Promote scientific and popular information on mountain research activity to create awareness of the importance of Namibia's mountains

Research is expensive, and is important that results are properly analyzed, used and communicated to target groups. Findings from mountain ecosystem research will feed into established databases and media. Mountain ecosystems in arid areas such as Namibia have a high degree of valuable endemic biodiversity.

Targets: *A suite of scientific and popular publications including a poster on Namibia's mountain ecosystems is available by 2005*

g Determine mountain conservation priority areas based on research recommendations

Mountain habitat data will be included in a systematic biodiversity area-prioritization analysis (chapter 1) and in the development of conservation management plans.

Targets: *The area prioritization exercise is finalized and information is used as basis for planning modifications to the national protected area network by 2003*

5 Sustainable Wetland Management

OBJECTIVE 5

Strengthen the implementation of the Constitution of Namibia (Article 95L) by adopting measures improving the protection of wetland ecosystems, biological diversity and essential ecological processes, as well as improving the sustainability of wetland resource use and preventing wetland loss and degradation.

STRATEGIC AIMS OVERVIEW

5.1 Protect and maintain essential ecological functions and the biological diversity of Namibia's wetland ecosystems

5.2 Create additional wetland conservation areas

5.3 Promote integrated land and water management

5.4 Raise awareness of wetland values and threats

STRATEGIC AIM 5.1

PROTECT AND MAINTAIN ESSENTIAL ECOLOGICAL FUNCTIONS AND THE BIOLOGICAL DIVERSITY OF NAMIBIA'S WETLAND ECOSYSTEMS

a Effectively implement the Ramsar Convention on Wetlands of International Importance and the Convention on Biological Diversity, emphasising national ecological priorities

The Ramsar and Biological Diversity Conventions are closely linked, and many Ramsar Convention implementation activities are undertaken by the Wetlands Working Group. Strengthening these activities with a dedicated secretariat staff will enable –

- development of a consultative national wetlands policy;
- development and updating of an integrated wetlands database to support planning and monitoring;
- prioritisation and protection of vulnerable and important wetlands; and
- production of Ramsar site management plans.

Targets: *A draft national wetlands policy is submitted to Cabinet by April 2003; a national database with core information on all major wetlands is functional by April 2003; management plans for all four Ramsar sites have been approved by December 2003*

b Support best practices in wetland and catchment research and management

The identification and promotion of best practices require collaborative research and monitoring of wetland health, in line with State of the Environment Reporting (SOER) needs. An index of biological integrity (IBI) is recommended for monitoring wetland ecological function. Regular conferences, training manuals, workshops and courses for scientists, managers, and resource users are all

integral to productivity and good scientific practice in this field. Finally, taxonomic capacity needs to be strengthened for aquatic organisms, and posts need filling at the National Museum of Namibia.

Targets: *A focused 'state of Namibian wetlands' research and monitoring programme incorporating an IBI approach is initiated by June 2004; wetlands component of a national training programme is defined and initiated by June 2004; at least two wetlands conferences are held by 2010; two relevant taxonomic posts are filled at the National Museum by 2006*

c Map key wetland habitats and resources

To conserve wetlands effectively, biotope mapping, focused surveys of priority wetlands, and opportunistic surveys of ephemeral wetlands after rainfall are important priorities.

Targets: *Detailed maps of all wetland areas linked to wetlands database by April 2004; survey data are fed into database and SOER activities by June 2004*

d Integrate the principle of ecological water needs in planning & implementation

Water is not simply a commodity for humans to use - it is also a habitat for biodiversity, including the biological resources important to people. Because Namibia is so arid and our main perennial rivers have their catchments in neighbouring countries, our wetlands are under greater pressure of degradation and resource conflict than elsewhere. The ecological flow requirements of rivers and other wetlands need to be estimated, and these reserves incorporated into water planning activities. Not doing so destroys river systems, their biodiversity, and the ecological processes on which people depend.

Targets: *The principle of ecological requirements of wetland systems is fully reflected in all municipal, local, regional and national water supply plans by 2004; requirements of all Namibia's major perennial and ephemeral rivers, including the oshanas, are estimated and integrated in planning by December 2008, with extra gauge stations in place for accurate monitoring and adaptive management by December 2008*

e Evaluate the impact of disturbed river flow regimes on landscapes, especially wetlands at river mouths

Namibia's vulnerable river mouths are important for biodiversity, including migratory species such as waterfowl, shorebirds, spawning fish, and (at the Kunene River Mouth) marine turtles. They face significant threats over the next 20-30 years through disturbance of flow through damming and water abstraction. The Orange River has one of the largest and most regulated catchments in Africa, and already suffers from negative environmental impacts on flow regimes. The Orange River Mouth, with its transboundary Ramsar site shared with South Africa, needs long-term wetland monitoring as part of the Environmental Observatories Network of Namibia (EONN) to help adaptive management activities as described above, and to feed into State of the Environment Reporting activities. EONN sites at all four Ramsar sites (Orange River Mouth, Sandwich Harbour, Walvis Bay and saltworks, and Etosha Pan) are strongly recommended. The impacts of disturbed flow regimes on subsistence and commercial agricultural activities also need urgent attention.

Targets: *EONN monitoring sites are established at all four Ramsar sites by January 2004; a national study of the ecological and socio-economic impacts of disturbed river flow regimes is conducted and publicized by July 2005*

STRATEGIC AIM 5.2

CREATE ADDITIONAL WETLAND CONSERVATION AREAS

a Create additional wetland reserves

The rarity and value of Namibia's wetlands to people and livestock place them under immense pressure. To protect wetlands and their ecological functions from degradation or loss, it is essential to identify unique and priority wetlands, assess conser-vation status and, where appropriate, develop management plans with local communities.

Targets: *The top 15 priority threatened wetlands are identified by December 2002 and appropriately protected (e.g. reserves, conservancies) with pragmatic management plans by December 2010*

b Establish effective transboundary wetland conservation

Our few perennial rivers are all shared with other nations which control their catchments. The negotiation of trans-boundary water rights and trans-boundary conservation areas are thus critically sensitive international issues. Sound trans-boundary management entails identifi-cation of sites, negotiation of management terms and benefits, and co-operation in day-to-day water management, conservation, research and public relations.

Targets: *Transboundary protected areas are managed effectively along the Orange, Kunene, and northeast perennial river catchments and wetlands by December 2010*

STRATEGIC AIM 5.3

PROMOTE INTEGRATED LAND AND WATER MANAGEMENT

a Promote landscape and catchment planning for mountain, woodland and wetland management

In line with strategic aims in chapter 4, the sound management of wetlands requires catchment-level planning which protects mountains, forests and woodlands.

Soil erosion and water runoff increase with deforestation and other types of poor management. Many wetlands worldwide have been degraded due to fragmented planning, or to the lack of planning.

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 is initiated by December 2003*

b Promote environmentally sound land uses in the vicinity of wetlands and reduce harmful or polluting land use practices

Agricultural practices have significant impacts on wetlands in the landscape, and the use of toxic pollutants in agriculture, health and infrastructure activities such as road verge maintenance can have serious local and catchment impacts on biodiversity. In line with Strategic Aim 4.2, wetlands need to be considered as sensitive and important components of landscapes, which add considerable value to certain land use practices such as tourism, fisheries, and organically based agro-forestry.

Targets: *A popular booklet on Namibian wetlands and their ecological role is produced by December 2003; wetlands are included with protected areas in integrated landscape planning (Strategic Aim 4.2) in 2003*

STRATEGIC AIM 5.4

RAISE AWARENESS OF WETLAND VALUES AND THREATS

a Promote public understanding of wetlands and participation in wetland management

To give Namibia's wetlands a chance to survive into the future, public awareness of their values and the threats they face is critical. Popular and technical books, community participation in wetland conservation and management, catchment management, regular public observance of World Wetland Day, and regular briefing of decision-makers on water management and wetlands conservation are all needed to fulfill this aim.

Targets: *Parliament approves the consultative national wetlands policy by June 2003; a popular booklet on Namibian wetlands and their ecological role is produced by December 2003*

b Promote the economic and other values of wetland ecosystems to people and incentives for good management

Wetlands have complex economic, social and ecological value to many people and their livelihoods. However, in times of water shortage wetlands are put under great pressure from people and livestock, in both communal and freehold tenure farming systems. Awareness of these values and of policy incentives to protect wetland systems is fundamentally important in improving resource management.

Targets: *A resource economic valuation of Namibian wetland systems of different types and scales is conducted, and results are fed into policy revisions and awareness programmes by 2008*

6 Sustainable Coastal and Marine Ecosystem Management

OBJECTIVE 6

Strengthen the implementation of the Constitution of Namibia (Article 95L) by adopting measures to improve the protection of coastal and marine ecosystems, biological diversity and essential ecological processes, and to improve knowledge, awareness, and the sustainability of resource use.

STRATEGIC AIMS OVERVIEW

6.1 Evaluate and reduce impacts of resource use activities on coastal and marine environments

6.2 Bring policy and legislation in line with the Convention on Biological Diversity and strengthen the legal framework for aquaculture activities

6.3 Maintain existing marine protected areas (MPAs) and proclaim new areas

6.4 Reduce pollution of coastal areas

6.5 Strengthen taxonomic collections and databases

6.6 Control and promote marine bioprospecting

6.7 Strengthen integrated coastal zone management (ICZM)

6.8 Improve information on and awareness of coastal and marine biodiversity

STRATEGIC AIM 6.1

EVALUATE AND REDUCE IMPACTS OF RESOURCE USE ACTIVITIES ON COASTAL AND MARINE ENVIRONMENTS

The major economic activities in Namibia's marine environment are fishing, prospecting and mining, and shipping. Along the sparsely populated desert coast, the main activities include tourism, localised human settlement, harbour usage, fish processing and packing, mariculture and sealing. Negative impacts of these activities, such as marine mining and fishing, need to be carefully evaluated and reduced through cooperative management in the framework of sustainable and clean development.

a **Implement research and monitoring programmes in support of sustainable use of marine and coastal resources**

Existing enforcement mechanisms related to the fishing, mining and shipping industries need continued strict application, and some new mechanisms need to be developed. Priority activities are the synthesis of existing information; the identification of gaps; the initiation of focused research, and the recommendation of improvements.

Targets: *Information is synthesized and research and monitoring gaps are prioritized by December 2002; indicator data are contributed to State of the Environment*

Reports annually; long-term impacts are analyzed and a mechanism for monitoring is established by December 2003

b Strengthen regulations and enforcement measures to reduce harmful environmental impacts

Existing regulations, penalties and sanctions related to by-catch of non-target species need continuous and strict enforcement, and new regulations need development to control effluent discharge into the sea.

Targets: *New regulations related to the Marine Pollution (Marpol) Agreement are promulgated by December 2003*

c Establish appropriate management structures

A new professional position of Coastal and Marine Biodiversity Coordinator needs to be established at the National Marine Information and Research Centre in Swakopmund to support the ecosystem management efforts of the Ministry of Fisheries and Marine Resources. The Ministry's lead role in promoting environmentally sound co-management of the marine environment needs to continue.

Targets: *A Coastal and Marine Biodiversity Coordinator is appointed to manage implementation of this action plan by July 2002; at least two additional national-scale co-management fora are held by 2010*

"On a global scale, marine biodiversity is threatened primarily by human abuse and mismanagement of both the living resources and the ecosystems that support them. The oceans are particularly likely to be abused in this way, since the degradation wreaked by human activities is largely out of view; there are no visible scars, such as are left when forests are cleared, to remind us of the consequences of our activities. Humanity depends on the oceans in many ways, most significantly but subtly in terms of global environmental support. About 99% of all primary production is carried out by marine phytoplankton, which also produce half of the world's oxygen and account for one third of the annual global carbon fixation. The sea governs the weather patterns and climate, stabilises temperatures and is a source of moisture for rainfall which replenishes freshwater supplies. In addition, an estimated 100 million people in the developing world alone depend upon marine fisheries activites for all or part of their livelihood. Clearly, abuse and mismanagement of these precious assets is blatantly inappropriate and indefensible, and could jeopardise human survival."

Sakko, AS, 1998. Biodiversity of marine habitats. In: Barnard, P (ed). Biological Diversity in Namibia –a country study. Namibian National Biodiversity Task Force, p. 220.

STRATEGIC AIM 6.2

BRING POLICY AND LEGISLATION IN LINE WITH THE CONVENTION ON BIOLOGICAL DIVERSITY AND STRENGTHEN THE LEGAL FRAMEWORK FOR AQUACULTURE ACTIVITIES

a **Review and make recommendations on existing policy and legislation to harmonise with the CBD**

Existing policy and legislation need to be critically reviewed and revised if necessary, and detailed regulations to the Aquaculture Act need promulgation.

Targets: *Policy and legislation are reviewed and revised, and detailed aquaculture regulations are promulgated, by December 2003*

b **Enforce procedures in the Aquaculture Act**

This will require, for example, that aquaculture zones be established based on recommendations from zonal environmental impact assessments.

Targets: *Zonation and environmental impact assessment procedures are routinely done and administered within six months of all applications*

STRATEGIC AIM 6.3

MAINTAIN EXISTING MARINE PROTECTED AREAS (MPAs) AND PROCLAIM NEW AREAS

a **Develop and enforce appropriate regulations for protection of MPAs**

Such regulations should be developed consultatively, and facilitate the harmonization of management plans and activities with adjacent Ramsar sites and parks.

Targets: *Protective regulations are in place by December 2003*

b **Establish new MPAs around the Namibian islands in line with planning recommendations and the Sperrgebiet Land Use Plan, via inventories, management plan development, and legal proclamation**

A planning report identified numerous opportunities for small marine protected areas. These must be carefully designed for maximum resource and biodiversity conservation benefits, harmonized with the Sperrgebiet Land Use Plan, and strictly enforced.

Targets: *An implementation plan for MPAs is drawn up by December 2003, and MPAs are designed and proclaimed by June 2005*

c **Establish unexploited sanctuary areas as scientific baseline sites**

These sites will serve as important baselines for long-term ecological research (LTER) and monitoring, and should be linked to the LTER activities of the Environmental Observatories Network of Namibia.

Targets: *At least four baseline sites are established and integrated into monitoring activities by December 2002*

d **Harmonize MPAs with coastal Ramsar sites and terrestrial parks**

Co-management planning and implementation of MPAs and adjacent coastal and terrestrial protected areas will have important benefits for tourism, fisheries, environmental management and information exchange.

Targets: *All MPA management plans are harmonized with those of adjacent reserves by December 2004*

STRATEGIC AIM 6.4

REDUCE POLLUTION OF COASTAL WATERS

a Comply with Marpol standards

The Marine Pollution (Marpol) Agreement sets strict standards for effluent and other pollutants in the world's oceans. Namibia's export of marine resources depends considerably on its ability to market 'clean and green' products. Compliance will involve introducing effluent-control regulations (Strategic Aim 6.1 b, above) and tightening regulatory controls in a number of areas relating to shipping and other marine industries.

Targets: *Namibia is fully compliant nationally with Marpol by January 2004*

b Strengthen early warning systems for harmful algal blooms and pollutants, via biomonitoring organisms and LTER sites

Environmental monitoring and early warning systems in the highly dynamic Benguela Current are particularly important to sound adaptive management.

Targets: *A strengthened, reliable early warning system is functional by January 2005*

c Include alien invasive species and genetically modified organisms in routine monitoring activities and LTER sites

Targets: *Data on spread of invasive ballast-water and other organisms are synthesized for State of the Environment Reports beginning January 2003*

STRATEGIC AIM 6.5

STRENGTHEN TAXONOMIC COLLECTIONS AND DATABASES

a Strengthen and computerize central specimen collections; hold and update duplicate specimen databases at National Museum and MFMR

Targets: *Central specimen collections are fully computerized and copied to the National Museum by June 2003*

b Expand biogeographic studies of coastal and marine species, e.g. deep water benthic species

The distribution of certain target and non-target species is poorly known, and information gaps need to be identified, prioritised, and filled where funds are available.

Targets: *A plan for filling prioritised gaps is agreed with specialists and stakeholders by November 2003; most important gaps are filled by November 2006*

c Strengthen human resource capacity in taxonomy

Namibia has insufficient taxonomic expertise in marine and coastal biodiversity, which is a serious constraint (chapter 9).

Targets: *At least two trained taxonomists specializing in marine and coastal organisms are working with the National Museum and/or MFMR by 2006*

STRATEGIC AIM 6.6

CONTROL AND PROMOTE MARINE BIOPROSPECTING

a Build awareness and strengthen capacity to regulate and promote marine bioprospecting in line with national policy and legislation

Marine organisms, especially invertebrates of the sea floor, are increasingly under the spotlight of the pharmaceutical and agrochemical industries. Namibia needs to control and, where desirable, promote this largely unseen bioprospecting activity, and ensure that revenues are locally shared.

Targets: *A focused study of marine bioprospecting in Namibia is completed by September 2003; a consultative strategy for the promotion, collaboration and regulation of bioprospecting activities is ready by December 2003*

STRATEGIC AIM 6.7

STRENGTHEN INTEGRATED COASTAL ZONE MANAGEMENT (ICZM)

a Strengthen national integrated coastal zone management fora to ensure coordination and co-management in development of new initatives

Targets: *Regular ICZM co-management meetings are held with all coastal regions by July 2002*

b Strengthen the role of biodiversity conservation and sustainable use in integrated coastal zone management

Targets: *Specific biodiversity activities are agreed with coastal Regional Councils and integrated into the Coastal and Marine Biodiversity Conservation and Management Project by September 2002*

The Benguela Current Large Marine Ecosystem covers Namibia's entire marine environment and coastal fringe, as it stretches from South Africa to Angola. It is the subject of an important new bioregional project of these three countries, focusing on integrated environmental co-management, and supported by the Global Environment Facility through the United Nations Development Programme. The strategic action plan developed here has been proposed as the national biodiversity component of Namibia's activities under the Benguela Current Large Marine Ecosystem (BCLME) Programme.

STRATEGIC AIM 6.8

IMPROVE INFORMATION ON AND AWARENESS OF COASTAL AND MARINE BIODIVERSITY

a Establish a public awareness programme

A public information officer post needs establishment at the National Marine Information and Research Centre (NatMIRC). This person will prepare and evaluate materials for distribution to target groups, and define, synthesize, post and update information on programme websites.

Targets: *A public information officer is appointed at NatMIRC and a public awareness programme is established by December 2003*

7 Integrated Planning for Biodiversity Conservation and Sustainable Development

OBJECTIVE 7

Strengthen appropriate mechanisms and frameworks for the integration of sectoral development planning and implementation activities at local, regional, national and international levels to enhance prospects for sustainable development in Namibia.

STRATEGIC AIMS OVERVIEW

7.1 Improve mechanisms for integrating sectoral planning and implementation activities

7.2 Review and streamline policy and legal frameworks

7.3 Strengthen Government's decentralization process through regional biodiversity and environmental management

7.4 Foster partnership between Government, NGOs and the private and public sectors

STRATEGIC AIM 7.1

PART B

IMPROVE MECHANISMS FOR INTEGRATING SECTORAL PLANNING AND IMPLEMENTATION ACTIVITIES

a **Promote permanent, effective mechanisms for effective intersectoral planning and policy formulation**

In key areas of natural resource management such as land, minerals and energy, agriculture and forestry, existing intersectoral communication mechanisms must be strengthened and institutionalized, so that joint planning, policy formulation and implementation do not depend on individual projects or personalities, but continue indefinitely. Such mechanisms will help prevent the enactment of policies or laws that inadvertently undermine conservation and long-term sustainable development.

Targets: *The Sustainable Development Commission is established and existing intersectoral fora on land issues are strengthened by February 2003*

b **Promote awareness among national planners of biodiversity as Namibia's capital resource base, on which economic development and livelihoods depend**

Biodiversity conservation is not a narrow sectoral activity hindering economic development, but the responsible management of Namibia's capital natural resource base, upon which sustained economic growth ultimately depends (chapter 9).

Targets: *Seminars, awareness days and written materials targeted at government planners, farmers, and other resource users are delivered on a regular basis by July 2003*

C Promote dialogue on experiences and best practices in the conservation, management and sustainable use of biological resources among ministries, NGOs and other institutions

Government agencies, NGOs, research institutes, conservancies, farmers and other groups have relevant experiences at different levels in biodiversity conservation, management, and sustainable resource use. Sharing of experiences is an important first step in the strategic allocation of responsibilities among institutional players, including the outsourcing of activities by Government where other institutions are better placed, or have better capacity, to undertake them.

Targets: *Working groups of the National Biodiversity Task Force and related organizations are strengthened and broadened by February 2003; bi-annual public fora on biodiversity conservation are established by 2003*

VISION 2030, National Development Plans and the NBSAP

The Office of the President, under guidance of the National Planning Commission (NPC), coordinates the participatory five-yearly National Development Plan process of Namibia NDP 2 (2001-2006) was recently finalised and contains specific sections on natural resource, water and land management, and industries such as fisheries and agriculture. Environment and sustainable resource management including biodiversity are dealt with as a cross-sectoral issue. Since the formulation of the first NDP, Namibia has engaged in the process of formulating a longer-term development vision, called Vision 2030.

The overall aim of Vision 2030 is to transform Namibia from a developing lower-middle income country to an industrially-developed high-income country by the year 2030. The initiative was started in 1998 under the leadership of His Excellency the President of the Republic of Namibia, Dr. Sam S. Nujoma, to provide a comprehensive development framework and a long-term vision for its implementation. The five-year NDPs are being developed within this framework.

The National Biodiversity Strategy and Action Plan (NBSAP), which has a ten-year planning horizon, has intersected its planning process extensively with the NDP 2 process, and as much as possible with the early stages of the Vision 2030 process. The NBSAP emphasizes and elaborates many of the core issues which NDP 2 and Vision 2030 identify as fundamental to sustainable development. At the time of going to press, precise streamlining of timeframes and budgets in this document with those of NDP 2 and Vision 2030 could not be achieved, as the latter two documents were still in the revision process and not yet available from the National Planning Commission. This streamlining will thus have to happen at the monitoring and evaluation stages of the NBSAP.

STRATEGIC AIM 7.2

REVIEW AND STREAMLINE POLICY AND LEGAL FRAMEWORKS

a Develop and implement an integrated policy framework for sustainable natural resource management, in line with the Convention on Biological Diversity and related treaties

National policies and legislation arising from sectoral planning can unwittingly undermine national efforts towards sustainable development, through 'perverse' incentives or regulations that influence resource management, agricultural practices, or public health, for example. A coherent national policy framework to support sustainable development through sound environmental management is urgently needed. This will require a thorough review and revision of policies and legislation with intended or unintended impacts on biodiversity and environmental management, in order to support the specific needs of thematic action plans in this document, and meet Namibia's obligations under the Convention on Biological Diversity. It will build upon a preliminary analysis done in 1999, and upon existing policy analyses for related issues such as desertification.

Targets: *A comprehensive policy review is completed by June 2003, and agreed revisions to relevant policies and legislation are enacted and implemented by Government ministries and others by June 2005*

STRATEGIC AIM 7.3

STRENGTHEN GOVERNMENT'S DECENTRALISATION PROCESS THROUGH REGIONAL BIODIVERSITY AND ENVIRONMENTAL MANAGEMENT

a Together with MLRGH, devise a framework for addressing biodiversity and environmental management most effectively in the decentralisation process

Natural resource conservation efforts will succeed only where resources are managed by those most concerned about them, in particular those whose livelihoods depend on them. Central government, local government and rural communities need to engage in joint planning of decentralised management of natural resources.

Targets: *Regional Councils' capacity and responsibilities for environmental management are clearly defined through a 'vertical' process of dialogue among government and other stakeholders by June 2004*

b Support strengthening of the biodiversity and environmental management capacity of MET regional offices

To effectively implement environmental strategies, policies and programmes, there is a need to strengthen the capacity of MET's regional offices as they provide crucial links to grassroots resource managers.

Targets: *Appropriate capacity building strategies for MET's regional offices are formulated by June 2003 and implemented is commenced by December 2004*

c **Explore potential to devise further mechanisms for devolution of biodiversity management responsibility and authority to natural resource manager level**

The primary aim of resource managers would be to work with local, district and regional players to establish management plans, zoning systems, landscape protection schemes and agreements to organize activities having impacts on biological diversity conservation (e.g. tourism, water use, waste treatment, urban expansion, enterprise development).

Targets: *An appropriate strategy for devolution of biodiversity management responsibility and authority to natural resource managers is formulated by December 2003 and implemented by July 2004*

STRATEGIC AIM 7.4

FOSTER PARTNERSHIPS BETWEEN GOVERNMENT, NGOs AND THE PRIVATE AND PUBLIC SECTORS

a **Identify and, in partnership, plan how private and public entities can support the common vision for biodiversity and environmental management in Namibia**

All sectors of Namibian society need to be involved if our environment is to be soundly and sustainably managed. Public - private partnerships and joint ventures are likely to be cost-effective and innovative ways of implementing many of the priority activities supporting the strategic aims of this national strategy and action plan.

Targets: *At least 20 public-private partnerships for effective biodiversity conservation are underway nationwide and demonstrating positive results by December 2006*

8 Namibia's Role in the Larger World Community

OBJECTIVE 8

Strengthen Namibia's role in biodiversity conservation and environmental management within SADC, Africa and throughout the world by building and maintaining strong international partnerships.

STRATEGIC AIMS OVERVIEW

8.1 Support the political will and commitment to the implementation of Namibia's obligations with respect to international treaties

8.2 Wisely use international assistance, while improving national capacity for sustainable environmental management

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

STRATEGIC AIM 8.1

SUPPORT THE POLITICAL WILL AND COMMITMENT TO THE IMPLEMENTATION OF NAMIBIA'S OBLIGATIONS WITH RESPECT TO INTERNATIONAL TREATIES

a Ensure that Namibia signs and ratifies existing international conventions and protocols that relate to the conservation of biodiversity

The Convention on Biological Diversity (CBD), the Convention on International Trade in Endangered Species (CITES), the Convention on Wetlands of International Importance (Ramsar Convention), the United Nations Framework Convention on Climate Change (UNFCCC), and the Convention to Combat Desertification (CCD) are five core conventions to which Namibia is a full Party. Other global and SADC-regional conventions and protocols, such as the Convention on Migratory Species (CMS), have not yet been signed, and Namibia's capacity to implement them needs re-evaluation. Urgent ratification of the Cartagena Protocol on Biosafety to the CBD and the Kyoto Protocol to the UNFCCC is required for Namibia to benefit fully from these conventions.

Targets: *The Kyoto and Cartagena Protocols are ratified by December 2002; re-evaluation of Namibian capacity to implement other biodiversity-related conventions and protocols is completed by November 2002*

b Review implementation of those international treaties relevant to the conservation and sustainable use of biodiversity to which Namibia is a party

Namibia needs to fulfill the spirit and letter of all relevant global environmental obligations to protocols and conventions to which we are a Party. Effectiveness of implementation needs to be reviewed and mechanisms to support implementation proposed where necessary, with focus on instruments dealing with desertification, climate change, biodiversity, forest principles and indigenous people's concerns.

Targets: *The Directorate of Environmental Affairs' International Conventions and Related Programmes Unit is fully established and supported by July 2002; implementation plans of national programmes supporting the CBD, UNFCCC, CCD are on track in June 2004*

c Enact and effectively enforce appropriate legislation to promote the conservation and sustainable use of biodiversity

The success of Namibia's efforts to manage, conserve and sustainably use biodiversity will depend in part on the effectiveness and appropriateness of legal, administrative and institutional mechanisms put in place to support these objectives.

Targets: *The Environmental Management Bill, Parks and Wildlife Bill, Integrated Pollution and Waste Management Bill, Biosafety Bill and Access to Genetic Resources and Related Traditional Knowledge Bill are all enacted with full staffing for effective implementation by December 2002, June 2003, December 2002, June 2003 and June 2004 respectively*

d Promote the development and use of mutually supportive trade and environmental policies for the conservation and sustainable use of biodiversity

International, SADC-regional or national trade policies may be indirect or direct conflict with the aims of conservation and sustainable use of biodiversity. It is therefore essential to promote the development of mutually supportive trade and environmental policies as one of the outcomes of policy review and framework initiatives (chapters 2,3,4,6,7).

Targets: *Dialogue with relevant partners in the trade, environment, agriculture, mining and other sectors is underway on streamlining of the relevant policies that impact on trade and the environment by June 2003*

e Promote and support as appropriate the development of bilateral or multilateral agreements and harmonization of policies and legislation within the SADC region on the conservation and sustainable use of shared or migratory natural resources

Countries of the SADC region share across their borders important ecosystems, critical resources and migratory species. Appropriate bilateral and multilateral agreements governing the conservation and sustainable use of shared or migratory natural resources thus need promotion and support. Policy and legislative harmonization within the region is also essential, as effective implementation of Namibian instruments will depend in part upon the measures adopted by neighbouring countries.

Targets: *SADC-wide harmonization of biotrade and biosafety frameworks is underway by June 2004; gaps in co-management of shared resources requiring bilateral or multilateral agreements are consultatively identified at SADC or bilateral fora by December 2006*

f Strengthen MET–MFAIB collaboration and expertise in negotiations

For Namibia to negotiate effectively in international fora and to represent adequately our national interests with regard to biodiversity management and sustainable use we need to invest in greater negotiation capacity through effective collaboration between the Ministries of Environment and Tourism (MET) and Foreign Affairs, Information and Broadcasting (MFAIB).

Targets: *A course for international negotiators regarding the issues of trade, environment and sustainable development is formulated and implemented, with at least ten negotiators trained by December 2003*

NAMIBIA AND INTERNATIONAL ENVIRONMENTAL AGREEMENTS

International treaties and conventions are legally subject to international negotiations and agreements, and are pieces of international law, once ratified by a country. Namibia has ratified most of the UN environmental conventions and is thus obliged to fulfil certain requirements. However, the UN environmental conventions are framed as guidelines and not prescriptions for sustainable development, since unique conditions prevail in every country. Namibia has so far been very creative and proactive in developing its own "action programmes" and approaches to issues of development and environment – perhaps because we are probably one of the countries in the world most dependent on natural resources, and most vulnerable to environmental degradation.

STRATEGIC AIM 8.2

WISELY USE INTERNATIONAL ASSISTANCE, WHILE IMPROVING NATIONAL CAPACITY FOR SUSTAINABLE ENVIRONMENTAL MANAGEMENT

a Ensure effective consultation with and agreement of relevant local stakeholders in all natural resource-related development efforts and international assistance

International assistance will be needed to bring a sharper focus to general national environmental concerns, particularly biodiversity management. It will also underscore the inextricable linkages between environment and development at the national level. It is essential that natural resource-related development efforts and international assistance are planned in full consultation and agreement with the relevant stakeholders in Namibia, especially local communities as the custodians of resources.

Targets: *An effective consultation and participatory mechanism regarding the negotiation of international assistance in place by June 2003*

b Ensure that international assistance programmes to Namibia do not incur significant adverse impacts on our biological diversity

Many countries, given dire need for financial assistance, accept assistance projects and programmes uncritically. Inappropriate international assistance may have significant adverse impacts on sustainable development and biodiversity. It is therefore imperative that development aid in Namibia be driven by nationally determined needs, goals and decision-support procedures, including if necessary strategic environmental assessment.

Targets: *Collaboration with the National Planning Commission and other relevant staekeholders on improving decision-support procedures is established by June 2003*

c Maximise investment benefits from the currently favourable external funding climate for sustainable development, while investigating strategic and cost-effective ways to reorient the national development budget to sustainable development in the longer term

The external funding situation remains very conducive for sustainable development, and Namibia retains a positive relationship with the donor community. Namibia should seize current opportunities for financial aid where these match national development objectives, especially in terms of capacity building, while also working to reorient the national development budget in strategic and cost-effective ways towards sustainable development investments in the longer term.

Targets: *The Environmental Investment Fund reaches US$30 m by 2005; concerted dialogue with the National Planning Commission and Ministry of Finance on national budget reorientation has begun by March 2003*

d Forge and continue effective cooperation with international partners to strengthen human, research and institutional capacity to conserve Namibian biological diversity

The conservation of biodiversity in Namibia will depend on the strength of its human resource, institutional and research capacity. Namibia's technical and scientific community is very small, and effective capacity building needs to make use of creative mechanisms, including mentorships involving both Namibian and international specialists to train young Namibian professionals in the short term.

Targets: *Mentorship programme is established and functional by December 2003; at least five new collaborative international biodiversity conservation and research projects are established and functional by June 2006*

STRATEGIC AIM 8.3

STRENGTHEN NAMIBIA'S ROLE IN INTERNATIONAL COLLABORATION IN BIODIVERSITY RESEARCH AND MANAGEMENT IN SADC, AFRICA AND BEYOND

a Enhance international collaboration in research related to biological diversity

Namibia has a small technical community that is able to participate or conduct research related to biological diversity. It is therefore necessary to foster increased SADC-wide and international collaboration in research related to biological diversity, strengthening Namibia's own centres of excellence and expertise. Capacity building of Namibian technical staff through this collaboration should be a priority.

Targets: *Namibian centres such as the Gobabeb Training and Research Centre (GTRC) and Hentie's Bay Centre are financially supported to increase research-based training opportunities in biodiversity conservation by at least 50% by 2005*

b Build and maintain strong cooperative partnerships for biodiversity conservation and environmental management within SADC, Africa and throughout the world

Namibia is currently ahead of many countries in terms of approaches to biodiversity conservation and environmental management within SADC, Africa and worldwide. It is necessary to work continuously with our counterparts and partners in the region and elsewhere to build and maintain strong international relationships and share experiences.

Targets: *Full engagement with SADC-wide, ecosystem-wide or global programmes in at least six areas by June 2004*

c Promote sharing of experiences, information and expertise in biodiversity management within SADC at the senior policy, professional and research levels

The sharing of best practices, information, and expertise in biodiversity management, especially with regard to biosafety, biotrade and bioprospecting in the SADC region is a high priority. These issues present new challenges to biodiversity management within the region, and Namibia has played a strong or lead role in policy framework development.

Targets: *A 'best practices' case study of Namibia's experiences and activities in biodiversity management, including biotrade, is published and distributed by June 2005*

d Promote and support the appropriate designation of jointly managed protected areas along national boundaries to conserve shared biodiversity and resources

Often areas with high ecological values deserving protection occur along national borders, especially where these are river catchments and mountain wildernesses. In such cases, harmonised management plans and strategies and joint proclamation may be desirable to address common environmental challenges. Seeing these areas as a unit and formulating a common vision among all stakeholders is a necessity in order to understand the dynamics of environmental changes and human impacts.

Targets: *The Ai-Ais/Richtersveld transboundary protected area of Namibia and South Africa has formulated and implemented common management plans and goals by December 2003; the Sperrgebiet is proclaimed as a multi-zoned national park and incorporated in this transboundary protected area by December 2003; a decision is taken by Angola and Namibia after full stakeholder involvement on the establishment of the Skeleton Coast – Iona transboundary park by March 2003; at least one further proposal has been consultatively discussed with all stakeholders by December 2004*

NAMIBIAN RESEARCH AND TRAINING INSTITUTES

Among developing countries, Namibia has often been at the forefront of implementing the various international environmental conventions, including the Convention on Biological Diversity, in the development, testing and documenting of innovative approaches to rural development, research, and sustainable natural resource management. A number of strategically important government, NGO and parastatal research institutes are situated in Namibia.

Notable are the Etosha Ecological Institute (EEI), which has undertaken wildlife and ecosystem research in the Etosha National Park and adjacent areas for decades, and the Gobabeb Training and Research Centre (GTRC), which is sited at the juxtaposition of several ecosystems in the central Namib Desert. GTRC is a joint-venture between the Ministry of Environment and Tourism, the Desert Research Foundation of Namibia and the local Topnaar community. With a forty-year history of basic and applied arid lands research, the GTRC has evolved to the status of SADC Centre of Excellence for Desertification Research, Training and Networking. Because desertification, so closely linked to biodiversity conservation issues, is a major environmental threat to Namibia, it is important for the nation to have access to such a facility.

Finally, the University of Namibia maintains, amongst other, the new Hentie's Bay Centre of Marine Biology and Fisheries, with modern lab facilities and a focus on marine and intertidal research. All these centres should be nurtured and further developed by Namibia as lead institutions for research and training for Namibian scientists and practitioners, as well as throughout the SADC region, Africa and the rest of the world.

9 Capacity Building for Biodiversity Management in Support of Sustainable Development

OBJECTIVE 9

Strengthen Namibia's human, institutional and national capacity to understand biodiversity and ecosystems, and manage Namibia's natural resources and ecosystems appropriately.

STRATEGIC AIMS OVERVIEW

9.1 Promote public awareness of biodiversity conservation and sustainable resource use

9.2 Build capacity to manage biodiversity and sustainable development in Namibia

9.3 Promote effective participation of disadvantaged groups in implementing this biodiversity strategy

9.4 Strengthen communities to participate as equal partners, i.e. in biotrade and bioprospecting

9.5 Strengthen and develop Namibian centres of excellence in biodiversity-related fields

STRATEGIC AIM 9.1

PROMOTE PUBLIC AWARENESS OF BIODIVERSITY CONSERVATION AND SUSTAINABLE RESOURCE USE

a **Develop and coordinate the implementation of an awareness strategy suitable for Namibia and pertinent to biodiversity issues**

Existing and potential environmental education activities relevant to biodiversity issues need to be assessed, and a creative programme designed to make best use of existing networks, specialists, media, and environmental education fora. This requires several initial steps: the assessment of current activities and needs; the prioritization of pertinent issues; the determination of appropriate language, media, and level of materials for each target group as ongoing activities. Innovative, visual and appealing ways to incorporate biodiversity issues of national importance integrally into primary, secondary and tertiary curricula need urgent development, in association with environmental journalists, educators and learners.

Targets: *Awareness and education co-ordination activities are outsourced by September 2002; a detailed and creative awareness strategy is developed by December 2002; first visible outputs are produced by June 2003*

b **Promote community awareness, exchange and sharing of information**

Target groups at local level include, but may not be limited to, learners, educators, community-based organizations and leaders, and extension workers in the natural resource and education sectors. An updated directory of organizations

needs to be developed. Regular feedback meetings with target groups, and newsletters, will keep groups informed and facilitate dialogue. Facilitation of media events, exchange visits, and public events and competitions are priorities.

Targets: *An updated directory of organizations is developed by December 2002; regular feedback meetings with partners are initiated by June 2003*

c Promote awareness of the potential of and threats to biological resources among industry, producers and users

Industrial and agricultural users of biological resources need identification, in line with chapter 2 on trade in biological resources, traditional knowledge and sustainable harvesting. Results of research on harvesting rates and potential new resources must feed into this process.

Targets: *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*

d Target decision-makers specifically

This requires the development and implementation of appealing mechanisms for regular information updates. Videos, pamphlets, field visits, and high-profile workshops to highlight specific, pertinent Namibian biodiversity issues are effective means of reaching busy people.

Targets: *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*

STRATEGIC AIM 9.2

BUILD CAPACITY TO MANAGE BIODIVERSITY AND SUSTAINABLE DEVELOPMENT IN NAMIBIA

a Build capacity of teachers, extension workers, journalists and researchers to understand and act on biodiversity issues

Again, effective design relies on the determination of the best approach for each target group. Development and testing of training modules, workshops and other approaches is critical.

Targets: *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*

b Develop state-of-the-art tertiary education programmes addressing biodiversity sciences and management

Full and effective implementation of the actions identified in this strategy requires considerable and substantial improvement in our knowledge and understanding of Namibian biological diversity in terrestrial, marine and freshwater environments. Education and training will be a significant component to achieve this goal, especially professional training through increased research into biodiversity at the genetic, species and ecosystem levels.

Targets: *The UNAM-Humboldt University Biodiversity Manage-ment and Research Masters Programme is established and fully functional by 2005*

c Maintain and expand the professional human resource base for biosystematic services through training

Namibia is in dire need of a stronger professional human resource base for biosystematics. Considerable efforts should be invested in expanding and maintaining well-trained personnel able to deal with biosystematics.

***Targets**: the Biosystematics Coordinator is appointed by March 2002; taxonomic posts, employment profiles and appropriate training institutions are identified, prioritized and promoted by the end of 2003*

d Improve capacity to disseminate biosystematic information

The dissemination of biosystematic information to relevant groups of interest is crucial to create enhanced understanding of Namibian biodiversity, so the improvement of capacity to disseminate biosystematic information is a priority. Existing biosystematic institutions in Namibia must provide necessary logistical support.

***Targets:** User groups and their information requirements are identified and prioritised, central specimen collections held at National Museum, MET, MFMR and other institutions are fully computerized, and the public has ready access to taxonomic databases by 2007*

e Maintain and improve the quality of biosystematic information

To assess Namibian biodiversity accurately, we need up-to-date and quality-proven biosystematic information. This will in turn require strengthening and support of the necessary human, technical and institutional capacity.

***Targets:** Standards and protocols regarding the collection of biosystematics information are set with ongoing consultation with all stakeholders by December 2003*

f Improve information availability and dissemination, raise awareness, and build capacity in the field of biodiversity conservation

Effective biodiversity management depends heavily on the availability of information. It is therefore important to disseminate and facilitate access to, and use of, relevant environmental information taking into account the intellectual property rights of the local community. It is also important that as information about Namibia's biodiversity accumulates, it is published and otherwise disseminated in ways readily accessible for national and regional planning and decision making by private, public and other relevant stakeholders.

***Targets:** Needs assessment of skills and capacity in the biodiversity conservation field, and availability of training opportunities, is completed by December 2003; target groups are identified and a dissemination strategy is developed by 2004*

g Take appropriate measures to build HIV/AIDS awareness into research and training programmes

This requires an analysis of the impact of HIV/AIDS on biodiversity management and conservation capacity in Namibia, in collaboration with AIDS workers. HIV/AIDS will have negative impacts on biodiversity management capacity, as in all fields, as it will reduce the number of available well-trained professionals able to conserve and manage biodiversity in Namibia.

***Targets:** Analysis of potential impacts is finalised and integrated into training strategies by June 2003*

h **Take measures to anticipate and mitigate projected declines in economic activities, e.g. subsistence and commercial agriculture, due to HIV/AIDS morbidity and mortality**

A majority of Namibians make their living partly or wholly from subsistence agriculture, most of them in the northern regions which are already largely affected by HIV/AIDS. Any decline in subsistence agriculture due to HIV morbidity and AIDS mortality will worsen poverty, which will in turn affect natural resources sustainable use and management.

Targets: *All relevant activities in this document affected by HIV/AIDS are re-evaluated annually beginning in November 2003; management structures are strengthened in order to support the national strategic response to HIV/AIDS by November 2003*

STRATEGIC AIM 9.3

PROMOTE EFFECTIVE PARTICIPATION OF DISADVANTAGED GROUPS IN IMPLEMENTING THIS BIODIVERSITY STRATEGY

a **Facilitate gender equality in resource management**

Rural Namibian women have always played, and continue to play, a pivotal role in biodiversity management. They have extensive knowledge of biodiversity including agricultural biodiversity, medicinal species, traditional food processing and natural resource management. Gender mainstreaming at all levels is required.

Targets: *Regular regional fora for rural women to exchange experiences, best practices and knowledge are initiated by 2005*

b **Increase involvement of black professionals and groups in biodiversity management**

The historical context of Namibia led to disparities in the professional education and capacity building of previously disadvantaged groups, especially black Namibians. Significantly increased funding for training and capacity building is needed to help achieve this empowerment, as well as affirmative action has to be rigorously applied.

Targets: *At least 80%of all senior biodiversity related positions are filled by appropriately qualified and motivated professionals from previously disadvantaged groups by 2005*

c **Specifically develop young professional programmes**

Special attention needs to be given to environmental education for young people as they will be the future natural resource managers and decision makers. It is therefore appropriate to develop young professional programmes related to biodiversity conservation in Namibia.

Targets: *Output of young professionals from existing training programmes and activities is doubled, and/or new activities designed, by end 2003*

CAPACITY BUILDING

For years 'capacity building' has been one of the key words in the environmental field in Namibia. What has been achieved? Of course, capacity building entails many levels, e.g. professional training, management and empowerment of community members, institutional capacity building, provisions of enabling policy and legislative frameworks, to name just a few. But HOW can capacity best be built? Equitable and equal partnerships have to be formed; people and local institutions need to be empowered to make their contributions.

It has to be one of Namibia's priorities to clearly define capacity building and to develop pragmatic and creative strategies to achieve this. The National Affirmative Action Act, for example, is one vehicle of capacity building and needs to be implemented rigorously and in a fair manner. Affirmative action applies to all marginalized groups, and promotes equally capable people of such groups to be favoured over others. If carefully applied, this is an important systematic tool for capacity building.

STRATEGIC AIM 9.4

STRENGTHEN COMMUNITIES TO PARTICIPATE AS EQUAL PARTNERS, E.G. IN BIOTRADE AND BIOPROSPECTING

a Develop an equitable benefit-sharing framework

Communities are the main custodians and users of biodiversity and should be seen as equal partners in biodiversity management. Communities need to share equitably in the benefits arising from the use of their knowledge, innovations and practices relevant to the conservation of biodiversity.

Targets: *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*

b Promote mechanisms for communities to share their knowledge with other partners

Communities have a wide range of knowledge innovations and practices that are relevant to the conservation and sustainable use of biodiversity. Such knowledge systems should be promoted for wider application with the prior informed consent (PIC) of such communities.

Targets: 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

STRATEGIC AIM 9.5

STRENGTHEN AND DEVELOP NAMIBIAN CENTRES OF EXCELLENCE IN BIODIVERSITY-RELATED FIELDS

a Foster Namibian institutions as centres of excellence and facilitate relevant partnerships with Government, parastatals, NGOs and other institutions

Several institutions in Namibia already are, or have potential to become, centres of excellence in biodiversity related fields (e.g. Gobabeb Training and Research Centre, UNAM's Henties Bay Center of Marine Biology and Fisheries, Etosha Ecological Institute). The GTRC is internationally highly respected for its work on desert ecosystems and dryland biodiversity. Such centres need to be strengthened and supported as investments in sustainable development and capacity building.

Target: Above-mentioned and other worthy institutions can secure significantly increased Government and external core funding for training and research by April 2005

10 Implementing this Strategy and Action Plan

PART B

OBJECTIVE 10

Put appropriate and strong structures and mechanisms into place that will best support the successful implementation, adaptive management and evaluation of the National Biodiversity Strategy and Action Plan (NBSAP).

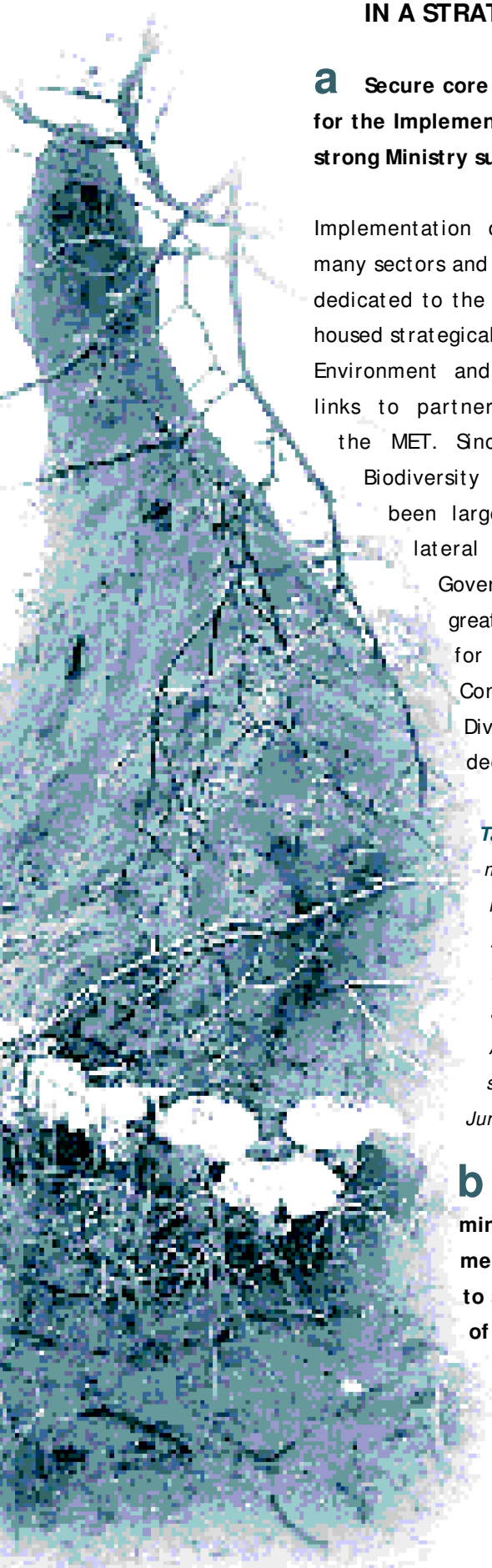
STRATEGIC AIMS OVERVIEW

10.1 Establish a strong, dedicated NBSAP Implementation Unit with full staffing and adequate resourcing in a strategic position

10.2 Strengthen existing capacity of the National Biodiversity Task Force and National Biodiversity Programme Coordination Unit

10.3 Strengthen the streamlining of biodiversity issues into national development planning and budgeting processes

10.4 Develop a detailed financial implementation plan for the NBSAP



STRATEGIC AIM 10.1

ESTABLISH A STRONG, DEDICATED NBSAP IMPLEMENTATION UNIT WITH FULL STAFFING AND ADEQUATE RESOURCING IN A STRATEGIC POSITION

a Secure core staffing and funding for the Implementation Unit with strong Ministry support

Implementation of the NBSAP involves many sectors and requires a dynamic unit dedicated to the process. This should be housed strategically within the Ministry of Environment and Tourism, with formal links to partners within and outside the MET. Since 1994 the National Biodiversity Programme (NBP) has been largely financed by multi-lateral and bilateral sources. Government needs to assume greater financial responsibility for implementation of the Convention on Biological Diversity as external sources decrease.

Targets: *A detailed implementation plan for the unit is developed by October 2002; core staff and operating budget for core activities are secured by April 2003; the unit is fully staffed and functional by June 2003*

b Strengthen use of intra-ministerial communication mechanisms within MET to support full integration of NBSAP activities in the Ministry's own planning

The MET's Technical Committee (TC) and other fora need regular dialogue with the National Biodiversity Programme (NBP) on expectations for MET staff and activities. Standing agenda items should be established, and decision processes supported by the NBP and its NBSAP Implementation Unit. The NBSAP Implementation Unit must also liaise regularly with other relevant MET committees.

Targets: *A detailed briefing is given to the TC by April 2002; NBSAP activities are fully integrated into detailed ministry planning by December 2002*

c Develop a detailed workplan for the NBSAP Implementation Unit, and clarify roles of the IU and current National Biodiversity Programme Coordination Office

To coordinate the smooth and efficient implementation of the activities and timetables outlined in this document, a detailed workplan will need to be generated by the head of the NBP. A clear division of labour between the IU and NBP Coordination Office needs to be set out and streamlined within the workplan of the Directorate of Environmental Affairs' Conventions and Programmes Division.

Targets: *A workplan and terms of reference are agreed with parties by September 2002*

STRATEGIC AIM 10.2

STRENGTHEN EXISTING CAPACITY OF THE NATIONAL BIODIVERSITY TASK FORCE AND NATIONAL BIODIVERSITY PROGRAMME COORDINATION UNIT

a Appoint professionals and trainee professionals to the NBP Coordination Office to support the work of the National Biodiversity Task Force, its working groups and partners

Targets: *A trainee Working Groups Support Officer and two other professionals are appointed on performance contracts by December 2002; salaries are assimilated in MET budget by April 2004*

b Strengthen efficiency and productivity of the National Biodiversity Task Force through strategic outsourcing of certain functions to implementation partners

The National Biodiversity Task Force and its working groups are voluntary bodies, and their members are heavily over-committed with responsibilities. Professional and administrative support is therefore needed to implement certain activities of the NBSAP. Implementation partners must be identified and contracted to coordinate the implementation of those components of the NBSAP that can be most effectively outsourced.

Targets: *Implementation partner organizations are identified and appointed through transparent procedures, with performance contracts and budgets, by December 2002*

c Further develop Action Plans of working groups, defining clear outputs to be generated, and agree on and enforce mechanisms for monitoring and evaluation of performance

Working groups, with support staff and implementation partners, need to identify action plan deliverables, and agree on mechanisms for evaluating outputs and performance.

Targets: *All working groups submit delivery plans for clear outputs by NBSAP timetables, and enforceable monitoring and evaluation mechanisms are agreed by October 2002*

d Strengthen existing synergies among national programmes supporting key environmental conventions

Natural synergies and shared interests between national programmes supporting the Conventions on Biological Diversity, Climate Change, Desertification, and Wetlands have been identified by the Directorate of Environmental Affairs (DEA) but need further operational development in the areas of joint financing, joint implementation planning, and joint environmental monitoring to support State of the Environment Reports.

Targets: *Conventions Division of DEA and national programme heads develop common timeframes for joint activities and identify obstacles by October 2002*

STRATEGIC AIM 10.3

STRENGTHEN THE STREAMLINING OF BIODIVERSITY ISSUES INTO NATIONAL DEVELOPMENT PLANNING AND BUDGETING PROCESSES

a Identify/initiate effective mechanisms for integration and streamlining

Mechanisms for improved integration include the soon-to-be-established Sustainable Development Commission, the existing National Biodiversity Task Force and other fora.

Targets: *NBSAP activities are integrated in national planning processes by the 2003-2004 financial year; selected components are reflected in the national budget by 2004-2005*

b Continue NBSAP awareness-raising efforts at senior management and political level to build necessary support for successful implementation

Permanent Secretaries' Round-tables, parliamentary briefings and other mechanisms (Chapter 9) need to be continued and strengthened. Concrete successes and benefits of the NBSAP need to be clearly demonstrated as efficient development investments.

Targets: *Budgetary provisions for NBSAP implementation activities are supported by the Ministry of Finance and Members of Parliament by the 2004-2005 financial year*

c Work towards an increasing realignment of the national budget to invest in sustainable development, including through implementation of the NBSAP

As development aid to Namibia decreases, intensive work with the National Planning Commission, Office of the Prime Minister, Ministry of Finance and other parties is needed. This will progressively support efficient investment via the national budget in NBSAP and other sustainable development activities for Namibians.

Targets: *Seventy-five percent of annual financing requirements for implementation of the NBSAP is met through the national budget by the 2007-2008 financial year*

STRATEGIC AIM 10.4

DEVELOP A DETAILED FINANCIAL IMPLEMENTATION PLAN FOR THE NBSAP

a Clarify the potential financing role of the Environmental Investment Fund and submit the NBSAP to its Board for review and prioritization

The Environmental Investment Fund, approved by Cabinet in 2000, has biodiversity conservation aims as one of its core portfolio areas. Ability of the EIF to finance certain components of the NBSAP needs clarification as soon as its Board is constituted.

Targets: *Discuss financing gaps with the EIF Board after it is constituted, by October 2002*

b Proactively seek financing from Government, multilateral, bilateral and private sources, including Government – donor roundtables to establish areas of interest

Targets: *First approaches are made by end of 2002, two roundtables by June 2005*

c Update and revise estimates of required financing for the period 2004-2010 as needed

Targets: *Revisions of financial requirements annually from Oct 2004, at time of GRN budgeting process for the subsequent financial year*

PART C

The Action Plan

While Part B outlines the national strategy, this section, Part C, elaborates the action plan supporting the strategy. It consists of individual action plans in logical framework format, which appear in the same order as the chapters and strategic aims. While Part B outlines overall objectives, strategic aims, and major targets, the action plan in Part C gives supporting details of lead agencies, timeframes, and estimated financial needs to carry out these activities needed to implement the strategy. A cross-reference to other chapters or original working group (WG) logframes (LF) is given, so that each working group can identify where under the ten themes of the strategy their planning contribution is allocated.

The financial estimates given in these action plans are summaries of the individual working group logframes or, in certain cases, from related planning documents consulted in the preparation of this document. They are rough estimates at best. In the long run, it will be necessary to elaborate on detailed budgets for the planned actions, and to negotiate the needed funds with the Ministry of Finance and/or external sources, such as development aid budgets. The budget estimates should provide a working estimate for future planning, both among the Government of the Republic of Namibia and the donor community.

Chapter 1. Action plan for biodiversity conservation priorities

Overall objective: Implement the Constitution (Art. 95 L) by adopting specific measures to improve protection of ecosystems, biological diversity and ecological processes, and to improve the sustainability of biotic resource use

Strategic Aim	Activity	WG IF	Lead agency (key collaborators)	Timeframe	Estimated cost (N$)	Priority
1.1. Identify and fill gaps in the protected area network to conserve vegetation types, habitats, landscapes, species and genetic diversity based on principles of complementarity	(a) Complete a systematic biodiversity area-prioritisation process to identify high value areas for biodiversity in terrestrial, freshwater and marine ecosystems	7, 13, 6, 16	MET/ NBP (MLRR, MAWRD, MFMR, MME, MRLGH, NGOs, conservancies, public)	Dec 2002 terrestrial; Dec 2004 aquatic and marine	140,000	1
	(b) Review current land uses and management systems, including protected areas, conservancies, rangelands, mining areas and other forms of management in terms of their effectiveness in biodiversity conservation	7, 13	MET/ NBP & MLRR (MAWRD, MME, MRLGH, MET/ DPWM, DoF, farmers' unions, NGOs, conservancies, support organisations)	June 2003	1,700,000	1
	(c) Review management goals, practices and capacity of the existing state protected area network, and make pragmatic recommendations for improvement	7, 13	MET/ NBP/ DPWM/ DSS (interested parties)	Dec 2002	70,000	1
	(d) Prepare proposals for public discussion on additional conservation areas in the state and supplementary network, in high value areas which are threatened and currently unprotected	7, 13	MET/ DPWM/ DSS/ NBP (MLRR, MME, MAWRD, MFMR, MRLGH, NGOs, conservancies, public)	Dec 2003 terrestrial; Dec 2005 aquatic/marine	150,000	1
	(e) Implement proposals and secure financing for effective long term management	7	MET/ DPWM/ DSS (MFMR, MAWRD, MRLGH, MLRR, NGOs, conservancies, public)	2000-2010; ongoing	implement proposals 2,000,000 pa	1
	(f) Participate in concerted programmes to improve management capacity and train new effective managers		MET/ NBP/ DPWM/ DSS (APAI)	Dec 2004	1, 200,000	1
1.2. Develop and support communal and freehold conservancies	(a) Support the role of conservancies in integrated landscape management for biodiversity	7	MET/ DPWM/ DSS/ DEA & NBP (MLRR, MAWRD, MRLGH, Nacso, conservancies, other NGOs, public)	Dec 2003	50,000	2
	(b) Use biodiversity data to guide the development of new conservancies	7	MET/ DPWM/ DSS/ DEA & NBP (Nacso)	Dec 2002	120,000	2
	(c) Assess compatibility of conservancies with national biodiversity goals	3, 11	MET/ DPWM/ DSS/ NBP esp. Biomes, Land Use WGs (Nacso)	2004	20,000	2

1.3. Strengthen conservation measures in and outside protected areas	(a) Analyse the biodiversity conservation impact of different land management categories	7, 11, see also 1.1. (b)	MET/ NBP & MLRR (Biomes, Land Use WGs, DSS, DoF, MAWRD, MME, MRLGH, farmers' unions, conservancies, NGOs and support organisations)	2006	2,200,000	1
	(b) Strengthen technical capacity among agencies, landholders and service organisation to evaluate and implement conservation measures	7, 9, 15	MET/ DPWM/ DSS (NGOs, support organisations, NBP, DoF, MAWRD, MME, MRLGH, farmers' unions, conservancies)	2008	300,000 pa	1
1.4. Address the needs of endemic and threatened species	(a) Identify priority species for focused research and conservation attention	7	MET/ NBP/ DSS/ DPWM (MAWRD/ NBRI, DWA, MFMR)	2003	45,000	1
	(b) Develop and implement management and recovery plans for priority taxa	7	MET/ NBP/ DSS/ DPWM (MAWRD, MFMR)	2006	2,000,000 pa	1
1.5. Strengthen ex-situ and in-situ conservation capacity	(a) Strengthen implementation of existing action plans of ex-situ genetic resources conservation in wildlife management, agriculture, fisheries and other	7, 1	MET/ NBP / DSS/ DPWM/ DoF, MAWRD, MFMR	2002; 2001-2010	500,000	2
	(b) Promote conservation and awareness of importance of agricultural genetic diversity • Assess and describe existing agricultural genetic diversity • Conserve genetic resources by ex-situ and in-situ methods	1, 4, 5, chapter 4	MAWRD/ DART (SADC/ UNDP/ FAO project; Vet Services, MAWRD/ DEES, Breeding Association, MET, farmers, SPGRC, IPGRI, Irene, Kew)	2001; 2001-2010	2,700,000	2

Abbreviations:
APAI = African Protected Areas Initiative, DART = Directorate of Agricultural Research and Training, DEA = Directorate of Environmental Affairs, DEES = Directorate of Engineering and Extension Services, DoF=Directorate of Forestry, DSS = Directorate of Scientific Services, DPWM = Directorate of Parks and Wildlife Management, DWA = Department of Water Affairs, FAO = Food and Agriculture Organization of the United Nations, IPGRI = International Plant Genetic Resources Institute, MAWRD = Ministry of Agriculture, Water and Rural Development, MET= Ministry of Environment and Tourism, MFMR = Ministry of Fisheries and Marine Resources, MLRR = Ministry of Lands, Resettlement and Rehabilitation, MME = Ministry of Mines and Energy, MRLGH = Ministry of Regional and Local Government and Housing, Nacso = Namibian Association of Community-based Natural Resource Management Service Organisations, NBP = National Biodiversity Programme, NBRI = National Botanical Research Institute, NGOs = Non-governmental organisations, SADC = Southern African Development Community, SPGRC = SADC Plant Genetic Resources Centre, UNDP = United Nations Development Programme

WG LF:
1=Agricultural Biodiversity Working Group, 3=Biosystematics Working Group, 4=Namibian Biotechnology Alliance (NABA), 6=Coastal and Marine Biodiversity Group, 7=Logframe for conserving biodiversity in conservation areas, 11=Land Use, Management and Tenure Impacts Project Core Group, 13=Terrestrial Biomes Group, 15=Traditional Knowledge Focal Group, 16=Wetlands Working Group of Namibia

Chapter 2. Action plan for sustainable use of natural resources

Overall objective: Facilitate sustainable natural resource management throughout Namibia as a fundamental theme of development planning, through appropriate ecosystem management and land use practices and through selective, sustainable harvesting of species

Strategic Aim	Activity	WG IF	Lead agency (key collaborators)	Timeframe	Estimated cost (N$)	Priority
2.1. Enhance capacity to harvest biological resources sustainably	(a) Promote detailed dialogue on the operational use of the sustainable use concept in different sectors (water, fisheries, wildlife and veld products, forestry, agriculture, tourism)	6, 8, 1, 13, 15	MET, MFMR, MAWRD (MLRR, MTI, various NGOs, NNFU, NAU, natural resource users)	2002; 2001- 2010	96,000	1
	(b) Strengthen quota-setting, carrying capacity guidelines, monitoring and enforcement capacity in local and national resource users, organisations and regulatory agencies, in line with policy guidelines	6, 8, 1, 13, 15, chapter 3	MFMR, MET, MAWRD	2004; 2001-2010	1,600,000	1
	(c) Develop regional and local markets for the sustainable harvest of natural resource products (including non-timber and wildlife products) • Carry out a socio-economic survey to establish NTFP with economic potential. • Facilitate development of local markets • Provide credit scheme for sustainable agriculture practises • Improve crafts and develop export market • Identify measures to reduce craft industry's impact on high value species (e.g. Pterocarpus angolensis) • Good permit system linked to community co-operatives • Develop certification system for products from sustainable management practises • Establish monetary value of biodiversity • Link with relevant programmes at Directorate of Research and Training (MAWRD)	8, chapter 4	MET/ DoF, DSS, DEA (NDC, MAWRD, MoF, MTI, Agronomic Board	2000-2003	72,000	1
2.2. Develop monitoring and incentive systems for sustainable natural resource use	(a) Facilitate the development of community/user based monitoring systems in support of adaptive management of natural resources • Prioritise resources for which monitoring systems have to be most urgently been developed • Devise training packages for monitoring • Conduct training courses	6, 8, 1, 13, 15, chapter 3	MET, MAWRD, MFMR, MME, MLRR (NAU, NNFU, CRIAA, other NGOs, conservancies, Napcod, Sardep, other related projects, LIFE, WWF)	2003; 2000-2010	4,000,000	1

	(b) Develop and implement incentive systems for sustainable use of natural resources • Revise and formulate relevant policies including such incentives • Enforce already developed policy e.g. drought policy • Especially include incentive concept for sustainable resource use and management in land related policy framework • Develop awareness material for policy makers on sustainable use and incentive concept	chapter 7	MET, MAWRD, MFMR, MLRR (inputs from users, NGOs, interested parties)	2003; 2005; 2000-2010	120,000	1
2.3. Conserve and sustainably use agricultural biodiversity	(a) Re-introduce wild species into previous range • Identify wild species that used to occur in certain areas and reconstruct why they vanished • Design and implement restoration programmes where appropriate • Promote game and wild species where appropriate and develop necessary support systems	1	MET, MAWRD/NBRI (NBP, NNF, CBNRM, LIFE, WWF, CRIAA)	2002	1,000,000	2
	(b) Promote genetic diversity in indigenous agricultural crops and livestock • Assess and describe livestock genetic diversity in Namibia • Conserve and promote the use of diverse indigenous and genetically adapted livestock breeds • Create awareness about the value of genetic diversity and locally adapted breeds (i.e. drought resistance) • Produce awareness materials on the benefits of diversification at genetic and species level in agricultural production systems (e.g. for drought and disease resistance) • Offer diversified and improved seed and breeding materials to smallholder and other farmers	1, 4 & 5	MAWRD/DART, DoP, Agronomy (SADC/UNDP/FAO project; Vet. Services, DEES, Breeding Association, MET, farmers, SPGRC, IPGRI, Irene, Kew, NBRI, ICRISAT, INTSORMIL, SIMMIT, IITA, IFTT, CRIAA, UNAM, DEA)	2001-2010	14,290,000	1
	(c) Educate population about the use and risks of genetically modified organisms (GMOs) in agriculture and their effects on food security • Identify benefits and potential threats of GMOs to Namibia (incl. economic potential and threats, environmental & agricultural impacts and other) • Raise awareness on the issues • Develop relevant policy and legislative framework	1, 4 & 5, chapter 7	NABA (MHETEC, MET, Agronomic Board, DEES Law Enforcement)	2001-2010	450,000	2

2.4. Make use of Indigenous Knowledge Systems (IKS) for sustainable management and use of biodiversity	(a) Strengthen indigenous natural resource management systems • With local communities, identify relevant customary laws, land use practices and resource management principles • Identify and document best and worst case practices • Establish a National Forum on Traditional Knowledge with regional and local representation • Include strong provisions for the protection of indigenous knowledge systems in Namibian natural resource management policy and legislation possibly • Promote high level awareness of the importance of indigenous knowledge for sustainable resource use, food security and national development • Harmonize legislation and clarify security of tenure or ownership of biological resources in different land tenure systems	15, chapter 7	MET/NBP/ELP & CASS (DSS, MAWRD, MLRR, CBOs, NGOs, traditional authorities, Sardep, UNAM, PoN, healers, other knowledge holders, CBNRM, NAU, NNFU)	2001-2003	235,000	2
	(b) Protect and promote sustainable use of species used for food and traditional medicine • Develop code of conduct for traditional healers including provisions for sustainable use of medicinal species • Facilitate the integration of traditional medicine and medical practitioners in the National Public Health System • Establish and develop a traditional medicinal plant botanical garden • Continue the selection of plant species that could be cultivated to aid in the diversification of diets and increased food security	15, 1	MHSS, traditional healers' bodies, MAWRD/NBRI (traditional authorities, MET/NBP, UNAM, PoN, Medical Association of Namibia, industries, MET/DoF, other MET, NGOs, CBOs,)	2002-2006	850,000	1
2.5. Promote and control bioprospecting and biotrade activities to generate sustainable benefits for Namibia	(a) Improve national and local capacity to benefit from and control biotrade • Assess and develop national scientific facilities and promote private enterprises able to add value to genetic resources • Identify, using resource assessment and initial valuation techniques, potential biological resources for trade and product development, and determine whether cultivation / farming is feasible and desirable • Conduct baseline study of the current and potential genetic resources industry, identifying economic flows, incentives, users, benefits and risks • Develop negotiation skills among Namibian stakeholders to facilitate fair, informed and mutually beneficial agreements • Identify and promote community based mechanisms for the sustainable economic use of natural resources	5, 15, chapter 9	UNAM Science Faculty, MAWRD/NBRI, MET, DRFN (PoN, MAWRD/NBRI/CVL, MFMR, NABA, NCCI, CRIAA, industries, MTI, NGO sector, IAC, CBOs, stakeholders, community service organizations)	2002-2010	740,000	2

	(b) Raise public and political awareness of issues, costs and benefits of biotrade and bioprospecting • Conduct training sessions on new policy and legislation at grassroots, community service organization, regulatory agency and political levels • Prepare and disseminate materials to target groups • Assess training needs for training in regulatory, research and community aspects • Integrate issues and case studies into tertiary curricula	5, chapter 9	MET/ELP/NBP (legal and service organizations, MAWRD/NBRI, other MAWRD, CRIAA, DRFN, UNAM, PoN, MTI, IAC, NAU, NNFU, community facilitators & activists, MHETEC, local industries)	2002-2006	315,000	1
	(c) Promote effective cooperation at relevant level • Harmonize access and benefit sharing legislation with other such frameworks in the region • Prepare case studies and develop other mechanisms for increased communication between relevant key stakeholders at local, national, regional and international levels	5, chapter 9	MET/NBP/ELP (NBRI, other MAWRD, MTI, MFAIB, SADC, other ministries, CRIAA, community service organisations, CBD, WIPO, WTO,FAO)	2000-2010	450,000	1
2.6. Ensure the safe use of biotechnology in Namibia	(a) Implement the National Biosafety Framework	4, chapter 7	MHETEC & NABA (MET, MAWRD, MHSS, MTI, MoF, MHA, MFMR)	2002	nominal	1
	(b) Develop and implement detailed procedures to control the transboundary movement of genetically modified organisms and their products	4, chapter 7, chapter 8	NABA (NBAC)	Dec 2002	220,000	1
	(c) Implement and enforce technical guidelines for the handling of genetically modified organisms and their products	4, 1, chapter 7	MHETEC & NABA (NBAC, UNAM, PoN, MHA)	Dec 2002	nominal	1
	(d) Establish and equip the necessary regulatory structures	4, chapter 7	MHETEC & NABA (NBAC, MET, MAWRD, MHSS, MTI, MoF, MHA, MFMR, UNAM, PoN)	Dec 2003	500,000 pa	1
	(e) Strengthen specialist capacity to implement National Biosafety Framework	4, chapter 9	MHETEC & NABA (NBAC, MET, MAWRD, MHSS, MTI, MoF, MHA, MFMR, UNAM, PoN)	2002; 2002-2010	70,000	2
	(f) Raise public and political awareness of issues related to biotechnology	4, chapter 9	MHETEC, NABA, NBAC (MET, MAWRD, MHSS, MTI, MoF, MHA, MFMR, UNAM, PoN)	2002; 2000-2010	90,000	1
	(g) Implement a concerted technical training programme	4, chapter 9	MHETEC, NABA, NBAC (MET, MAWRD, MHSS, MTI, MoF, MHA, MFMR, UNAM, PoN)	2006; 2002-2010	320,000	1

Abbreviations:

CASS = Centre for Applied Social Studies, CBD = Convention on Biological Diversity, CBNRM = Community-based Natural Resource Management Programme, CBOs = Community-based Organizations, CRIAA = Centre for Research Information Action Africa; CVL= Central Veterinary Laboratory, DART= Directorate of Agricultural Research and Training, DEES = Directorate of Engineering and Extension Services, DoF = Directorate of Forestry, DoP = Directorate of Planning, DRFN = Desert Research Foundation of Namibia, DSS=Directorate of Scientific Services, ELP = Environmental Legislation Project of MET, FAO = Food and Agricultural Organization of the United Nations, ICRISAT= International Crop Research Institute for the Semi Arid Tropics, INTSORMIL= International Sorghum and Millet Improvement Program (US), SIMMIT= Sentro Internacional de Mejoramiento de Maiz y Trigo, IFTT= Indigenous Fruit Task Team, IITA – International Institute for Tropical Agriculture, IPGRI = International Plant Genetic Resources Institute, LAC = Legal Assistance Centre, LIFE= Living in a Finite Environment Programme of WWF, MAWRD = Ministry of Agriculture, Water and Rural Development; MET= Ministry of Environment and Tourism, MFAIB = Ministry of Foreign Affairs, Information and Broadcasting, MFMR = Ministry of Fisheries and Marine Resources, MHA = Ministry of Home Affairs, MHETEC = Ministry of Higher Education, Training and Employment Creation, MHSS = Ministry of Health and Social Services, MLRR = Ministry of Lands, Resettlement and Rehabilitation, MoF = Ministry of Finance, MRLGH = Ministry of Regional and Local Government and Housing, MTI = Ministry of Trade and Industry, NABA = Namibian Biotechnology Alliance (of the National Biodiversity Task Force), Napcod = Namibia's Programme to Combat Desertification, NAU = Namibia Agricultural Union, NBAC = Namibian Biosafety Advisory Council, NBP = National Biodiversity Programme, NBRI = National Botanical Research Institute, NCCI = Namibian Chamber of Commerce and Industry, NDC = Namibia Development Corporation, NGOs = Non-governmental Organizations, NNF = Namibia Nature Foundation, NNFU = Namibian National Farmers' Union, PoN = Polytechnic of Namibia, SADC = Southern African Development Community, Sardep = Sustainable Animal and Range Development Programme, SPGRC = SADC Plant Genetic Resources Centre, UNAM = University of Namibia, UNDP = UN Development Programme, WIPO = World Intellectual Property Organization, WTO = World Trade Organization, WWF = World Wildlife Fund (US)

WG LF:
1=Agricultural Biodiversity Working Group, 4=Namibian Biotechnology Alliance (NABA), 5=Biotrade Focal Group, 6=Coastal and Marine Biodiversity Group, 8=Forest Biodiversity Focal Group, 13=Terrestrial Biomes Group, 15=Traditional Knowledge Focal Group

Chapter 3. Action plan for monitoring, predicting and coping with environmental change and threats

Overall objective: Improve human well-being, livelihood and environmental sustainability in Namibia through better proactive and adaptive management

Strategic Aim	Activity	WG IF	Lead agency (key collaborators)	Timeframe	Estimated cost (N$)	Priority
3.1. Strengthen national capacity for reliable decisionmaking on the environment and development	(a) Integrate national information systems and analytical activities related to natural resource management and development planning • Streamline biodiversity into State of the Environment (SOE) reporting and other national environmental programmes • Develop policy on open information access	chapter 7	MET/DEA/NBP & Infocom (EMIN & EONN partners, incl. all line ministries)	2001-2010	1	
	(b) Strengthen mechanisms for political-technical dialogue on environmental change • Strengthen government-created forum "National Council for Research, Science and Technology" in environmental issues • Regular Permanent Secretaries' round-table meetings • SADC-wide decisionmakers' discussion as facilitated by GLOBE South Africa	chapter 7, chapter 8, chapter 9, chapter 10	MET(all other ministries)	2002, 2001-2010	nominal	1
3.2. Improve national and local capacity to monitor, detect and predict environmental change	(a) Establish and implement a functional Environmental Observatories Network of Namibia (EONN) • Define purpose of long-term environmental research (LTER) in Namibia; define membership criteria; identify partners & solicit membership; develop common vision among members; formulate EONN drivers and response variables; define role of committee; develop guidelines for LTER in Namibia • Link with Environmental Monitoring and Indicators Network (EMIN) of DEA	12, EMIN	DRFN (EMIN, DEA/Infocom, EONN partners; SADC-EON)	2002; 2000-2010	30,000	1
	(b) Identify, promote and facilitate the appropriate operation of monitoring sites • Determine biophysical, ecological, policy and resource-economic site selection criteria to guide projects & institutions • Namibian institutions & projects establish own long-term research sites, in synergy where possible • EONN serves as a source of technical expertise to assist institutions and individuals to design long-term monitoring systems and procedures as part of new programmes • EONN facilitates capacity-building at institutional LTER sites	12, EMIN, 13	DRFN (EMIN, DEA/Infocom, EONN partners)	2005; 2000-2010	1,200,000	1

	(c) Facilitate environmental monitoring and analyses of long-term and large-scale processes • Obtain baseline data by monitoring along EONN guidelines • Conduct experiments so as to continue monitoring (by-product) • EONN members assist other members with data collection, analysis and interpretation where required, feasible and practical • Identify and gain knowledge of long-term phenomena • Elucidate how short-term studies reflect long-term processes • Examine the role of episodic events • Provide data for modelling at large spatial and temporal scales • Recognise changes caused by human activities • Elucidate environmental and socio-economic factors that affect people and their environment	12, EMIN, 13, chapter 8, chapter 9	DRFN, GTRC, EEI (EMIN, DEA/Infocom, EONN partners incl. all line ministries)	2007; 2000-2010	10,000	1
	(d) Establish, operate and maintain a comprehensive meta-database • Integrate with EMIN at DEA • Establish data sharing policy among network members • Design and manage an effective metadatabase with detailed descriptions of environmental data in Namibia, how to obtain data, conditions of use	12, EMIN	EONN, EMIN, DEA/Infocom (EONN partners, GTRC)	2002; 2000-2010	140,000	1
	(e) Connect the EONN network to partner networks • Establish information exchange with EMIN, ILTER, GTOS, SAEON, SADC desertification network and other developing national networks in Southern Africa • Publish EONN details in media of international partners • Contribute to the establishment of a functional Southern African regional LTER network • Website describes EONN, participants and linkages • EONN sites have descriptions of projects and data on websites • Request assistance from ILTER, GTOS and SAEON as required	12, EMIN	DRFN, EONN, EMIN, DEA/Infocom, SADC Desertification Network	2002; 2002-2010	36,000	2
	(f) Identify and ensure input and collaboration from partners, including local resource managers, decision-makers, researchers and students • Foster mechanisms of information flow out of the network • EONN assumes an advocacy role, promoting the role and importance of LTER by disseminating information on the relevance and essential usefulness of monitoring • Use LTER as training tool for Namibian students: incorporate into field courses and capacity building • Use LTER projects as demonstration tools to further understanding of the Namibian environment • Publish in scientific, popular and policy media	12, EMIN	DRFN, EONN (EMIN, DEA/Infocom, UNAM, PoN, all line ministries)	2005; 2002-2010	320,000	1

3.3. Develop reliable indicators and monitoring systems of biodiversity and ecosystem function	(a) Review, streamline and where appropriate develop reliable indicators of biodiversity and ecosystem function • Review already identified biodiversity indicators for terrestrial, freshwater and marine environments • Identify and test additional indicators • Establish studies in support of identifying reliable indicators of ecosystem function where necessary	12, EMIN, 13	MET(EONN, EMIN, DEA/Infocom (MSc & BTech studies), DRFN, MAWRD, MFMR, MLRR, research institutes, UNAM, PoN)	2002; 2004	140,000	1
	(b) Design appropriate national, regional and local level monitoring systems of biodiversity and ecosystem function • Design national, regional and local level monitoring programmes for identified indicators • Develop coordinated multi-stakeholder implementation system where appropriate	12, EMIN, 13	MET(EONN, EMIN, DEA/Infocom (MSc & BTech studies), DRFN, MAWRD, MFMR, MLRR, research institutes, UNAM, PoN)	2002; 2004	100,000	1
	(c) Implement monitoring programmes and surveys • Coordinate multi-stakeholder implementation • Identify potential funding sources from development and research funding bodies or endowments • Garner support from ILTER, GTOS and collaborating international institutions and researchers for (collaborative) funding proposals • EONN to engage in collaborative programmes where possible Establish core funding for network functions (communications, website maintenance, meetings, promotion)	12, EMIN, 13	DRFN & MET(EONN, EMIN, DEA/Infocom, MET, MAWRD, MFMR, MLRR, research institutes, UNAM, PoN)	2002; 2004; 2000-2010	300,000 initial proposal Ongoing monitoring more expensive	1
3.4. Enhance national capacity in biosystematics to provide support to biodiversity conservation management	(a) Develop effective mechanisms to enhance collaboration and networking in biosystematics at all levels • Recruit and appoint Biosystematics Co-ordinator (BSC) • Obtain requirements from NBP partners (and other users) for taxonomic support • Review and evaluate existing taxonomic capacity (infrastructure, collections, equipment, human resources) • Compile and publish a directory of Namibian taxonomic expertise • Integrate taxonomic efforts for different organisms so that all appropriate resources and technologies are brought together in support of overall goal • Prepare and complete a Biosystematics Country study for Global Taxonomy Initiative	3	NBP, BSC (NBRI, NMN, MAWRD/DWA, MAWRD/VS, MET/DSSS, MFMR, MHSS, DRFN, UNAM, Polytech)	2001-2003/2010	423,000	2
	(b) Solicit financial and training support to improve Namibian biosystematics services • Co-ordinate drafting of a GEF/GTI proposal • Prepare a comprehensive training plan to submit to all donors	3	BSC (NBP, BSWG, All)	2002	20,000 proposals	1

	(c) Develop and implement procedures to allow focused, cumulative biodiversity inventory work in support of environmental planning • Identify organisations not currently mandated and consider responsibility and capacity • Develop and update databases, incorporating repatriated data from elsewhere • Identify gaps in existing knowledge • Establish criteria for selecting and prioritising target taxa and areas • Clarify protocols for processing material, especially for vouchers and non-target organisms • Advise on appropriate target organisms, sampling needs, and likely time period. • Undertake large-scale, multiple site/taxa collecting and monitoring • Support continued and/or improved curation and maintenance of specimen collections (including new facilities for NMN) • Support ongoing programme of taxonomic research so that taxon delimitation can be well understood and easily applied by users	3, chapter 9	BSC/NBP, NBRI, NMN (MAWRD, MFMR, MET, MHSS, NNF)	2004; 2000-2010	2,940,000	1
3.5. Identify & monitor main environmental threats	(a) Build national consensus on a refined priority list of threats to sustainable development and environmental health, especially biodiversity	12, chapter4, chapter5, chapter6	MET/NBP/Infocom (EMIN, EONN, MME, MAWRD, MLRR, MFMR)	2001	40,000	1
	(b) Ensure these threats are adequately reflected in core national biodiversity and environmental indicators and monitoring processes	chapter4, chapter5, chapter6	MET/NBP/Infocom (EMIN, EONN)	2004	nominal	2
	(c)Ensure interactive information flow on these threats and indicators to and from decisionmakers	chapter7, chapter8, chapter9	MET/NBP/Infocom (EMIN, EONN, all line ministries)	2000-2010	nominal; 20,000	2
3.6. Raise awareness and strengthen capacity to adapt to climate change	(a) Synthesise relevant information and scenarios from other sources	chapter4, chapter5, chapter6	MET, MAWRD, MFMR, MME, NCCC, NBP	2003; 2001-2010	72,000	2
	(b) Commission analyses of biodiversity impacts in Namibia with appropriate partners • Conduct baseline and background analyses; build accurate models; disseminate results to decisionmakers, scientists and public	chapter4, chapter5, chapter6	MET, MAWRD, MFMR, NCCC, NBP	2002	140,000	1
	(c) Design and implement appropriate awareness programme based on focused summary information for target audiences in consultation with stakeholders, i.e. NCCC, CGCC and public fora	chapter9	NCCC, NBP (MET, MAWRD, MFMR)	2003; 2006; 2001-2010	50,000	2
	(d) Identify human and institutional capacity needs through current assessment processes, and implement and integrated plan to strengthen this capacity, in line with needs of other sustainable development-related programmes	chapter9	MET, MAWRD, MFMR (NBP, NCCC)	2002; 2001-2010	1,800,000	2

	(e) Integrate climate change monitoring and research needs in the design and planning of EONN sites • Establish and equip EONN sites with basic climate monitoring instruments • Encourage focused experimental analyses at EONN sites and elsewhere	12	MET/NBP, NCCC (EONN, DRFN, MME)	2005; 2001-2010	12,000,000	1
	(f) Focus research and management planning on climate change impacts on vulnerable species and areas, e.g. Namib escarpment and Sperrgebiet, and make funds available to implement management plans	1, chapter 1	MAWRD & MET/DSS/DWP/NBP (DRFN, GTRC, other relevant research bodies)	2006	120,000	3
	(g) Make results and recommendations regularly available to stakeholders and decisionmakers through appropriate media	chapter 7, chapter 8, chapter 9	MET/NBP, NCCC	2002; 2001-2010	60,000	2
3.7. Manage and mitigate desertification, land degradation & land conversion	(a) Develop indicators and national level overview of the extend of desertification in Namibia	chapter 4	DRFN, Nepru, MET, MAWRD (Counterpart network, MME)	2002; 2002-2010	500,000	1
	(b) Develop local level indicators of desertification and participatory, community-based monitoring systems (environmental and socio-economic)	chapter 2, chapter 4	DRFN, Nepru, MET, MAWRD (Counterpart network, MME)	2004	1,200,000	1
	(c) Strengthen the capacity of community-based organisation (CBOs) to manage the natural resource base, their livelihoods and effects of desertification more effectively	chapter 2, chapter 7, chapter 9	DRFN, Nepru, MET, MAWRD (Counterpart network)	2004; 2000-2010	2,500,000	1
	(d) Strengthen the capacity of service organisations (SOs) to provide a better service to natural resource users, helping to mitigate the effects of desertification	chapter 2, chapter 7, chapter 9	DRFN, Nepru, MET, MAWRD (Counterpart network)	2004; 2000-2010	100,000	2
	(e) Harmonise the policy framework affecting sustainable natural resource management and thus desertification	chapter 7	DRFN, Nepru, MET, MAWRD (Counterpart network, MME)	2005; 2000-2010	50,000	2
3.8. Reduce the threat to biological diversity from alien invasive species	(a) Review and categorise information on alien invasive species known in Namibia • Synthesise existing information on (alien) invasive plants and animals	10, 1, chapter 3 GCC	UNAM, PON, NBP (IASWG) of MET, other MET, NBRI & DWA of MAWRD, other MAWRD, National Museum of MBESC, MFMR	2001	nominal	1
	(b) Establish an ongoing database and atlas on plant and animal alien invasive • Update through new surveys and inventories • Streamline & link database to EMIN & EONN • Compose and regularly update priority list of invasive alien plant species	10, 1, chapter 3, EMIN	UNAM, PON, EMIN & EONN with inputs from the above	2000-2005	612,000	1

	(c) Research the invasiveness of selected species, the impact on livelihood security & potential mitigation strategies • Identify priority research topics • Encourage i.e. BSc thesis work on selected topics	10, 1, chapter 3, chapter 9	UNAM, PON, NBP(IASWG) of MET, other MET, NBRI & DWA of MAWRD, other MAWRD, National Museum of MBESC, MFMR	2001-2003/2010	353,000	2
	(d) Establish policy, legislation and control measures for alien invasive species, and strengthen regulatory capacity • Identify gaps in current policy and legislative framework • Draft necessary new policies and legislation as needed	10, 1, chapter 7	MoJ, UNAM, PON, NBP (IASWG) of MET, other MET, NBRI & DWA of MAWRD, other MAWRD, National Museum of MBESC, MFMR	2000-2003	20,000	2
	(e) Promote public awareness of the ecological and economic threat posed by alien invasive species & potential mitigation strategies • Produce relevant information materials for selected target groups i.e. farmers and agriculturists	10, 1, chapter 9	UNAM, PON, NBP (IASWG) of MET, other MET, NBRI & DWA of MAWRD, other MAWRD, National Museum of MBESC, MFMR	2001-2010	120,000	2
	(f) Initiate and test appropriate, low-impact control projects for problem invasive species • Identify priority case studies • Conduct research • Communicate research results to natural resource managers, policy makers and legislators	10, 1	UNAM, PON, NBP (IASWG) of MET, other MET, NBRI & DWA of MAWRD, other MAWRD, National Museum of MBESC, MFMR	2003; 2000-2010	1,200,000	1
3.9. Strengthen nationla and local capacity to manage and reduce pollution	(a) Identify geographic and thematic 'pollution hotspots' with serious biodiversity impacts • Identify immediate sources and root causes of pollution and work to stop them through concerted dialogue and action • Develop remediation plans with Industries and Pollution Programme and others	chapter 4, chapter 5, chapter 6	MET (MME, MWTC, MAWRD, NGOs, research institutes, private industries)	2004	96,000	2
	(b) Develop participatory mechanisms for reducing pollution at source	chapter 2, chapter 9	MET, MME, MWTC (private sector, fishing, producing, mining industries, affected and interested groups)	2003; 2000-2010	4,200,000 (Mainly to be carried by emitting industry)	2
3.10. Develop and apply appropriate rehabilitation and restoration methods to degraded ecosystems	(a) Assess the disturbance or degradation status of habitat units and land use categories • Assess key landscape and ecological process • Determine level and causes of disturbance	14, 11	DEA, NBP (Napcod, ecological research stations, MME)	2001-2003	96,000	2

	(b) Investigate and develop most appropriate restoration and rehabilitation methodologies for all natural resource managers • Develop and prioritise research framework • Conduct case studies on best practices for various land/resource uses and environmental units/ecosystems • Develop best management practices and guides for rehabilitation and restoration • Communicate results in user friendly and appropriate formats • Define appropriate levels/thresholds of restoration and rehabilitation	14, 11	DEA, NBP, DoF, MAWRD, MME (Napcod, ecological research stations, private industry)	2001-2003	168,000	1
	(c) Develop policy and legislative incentives for sustainable biodiversity management, incl. restoration and rehabilitation • Review existing policy and legislation and promote and implement biodiversity supportive aspects • Recommend incentives for biodiversity conservation and sustainable use for incorporation in future policy and legislative development (e.g. development of land reform legislation)	14, 11, chapter 2, chapter 7	DEA (all relevant ministries and stakeholders)	2005; 2002-2010	150,000	1

Abbreviations:
BSC = Biosystematics coordinator, BSWG = Biosystematics working group (of the National Biodiversity Task Force), CBNRM = Community-based Natural Resource Management Programme, CBOs = Community-based Organizations, DEA = Directorate of Environmental Affairs, DoVS = Directorate of Veterinary Services, DRFN = Desert Research Foundation of Namibia, DSS = Directorate Special Services, DWA = Department of Water Affairs, DPW = Directorate Parks and Wildlife Management, EMIN = Environmental Monitoring and Indicators Network, EONN = Environmental Observatories Network Namibia, GTRC = Gobabeb Training & Research Centre, IASWG = Invasive Alien Species working group (of the National Biodiversity Task Force, Infocom = Information for Communication project at DEA/MET, MAWRD = Ministry of Agriculture, Water and Rural Development; MBESC = Ministry of Basic Education, Sports and Culture, MET = Ministry of Environment and Tourism, MFMR = Ministry of Fisheries and Marine Resources, MHSS = Ministry of Health and Social Services, MLRR = Ministry of Lands, Resettlement and Rehabilitation, MME = Ministry of Mines and Energies, MWTC = Ministry of Works, Transport and Communications, Napcod = Namibia's Programme to Combat Desertification, NBP = National Biodiversity Programme, NBRI = National Botanical Research Institute, NCCC = Namibia Climate Change Committee, NEPRU = Namibia's Economic Policy Research Unit, NGOs = Non-governmental, Organizations, NNF = Namibia Nature Foundation, PoN = Polytechnic of Namibia, SADC = Southern African Development Community, SADC-EON = Southern African Development Community, UNAM = University of Namibia

WG LF:
1=Agricultural Biodiversity Working Group, 3=Biosystematics Working Group, 10=Alien Invasive Species Working Group, 11=Land Use, Management and Tenure Impacts Project Core Group, 12=Environmental Observatories Network of Nambia Committee, 13=Terrestrial Biomes Group, 14=Restoration Ecology Working Group

Chapter 4. Action plan for sustainable land management

Overall objective: Strengthening the implementation of the Constitution (Art. 95 L) by adopting measures improving the protection and sustainable use of terrestrial/land ecosystems, their biological diversity and essential ecological processes.

Strategic Aim	Activity	WG LF	Lead agency (key collaborators)	Timeframe	Estimated cost (N$)	Priority
4.1. Strengthen capacity to provide environmental information and policy advice to guide land use planning and the land reform process	(a) Evaluate policy impacts of biodiversity conservation issues in different land management categories	11, 13, chapter 1	MET and MLRR (MAWRD, MRLGH, MME, NPC, NBP, NAU, NNFU, other institutes and organizations)	2006; 2001-2010	3,500,000	1
	(b) Facilitate widespread public and political dialogue on land reform and the environment	11,13	MET and MLRR (MAWRD, MRLGH, MME, NPC, NBP, NAU, NNFU, other institutes and organizations)	2001-2010	70,000	1
4. 2. Identify and promote biodiversity-compatible land and resource uses and management systems	(a) Broaden the use of bioregional and catchment management • Develop an integrated support map for development planners based on bioregions and catchments • Build the confidence and capacity of development planners and implementing agencies in bioregional and catchment planning and management	7, 11, 13	MET, MAWRD, MLRGH, MLRR, DRFN (other institutions and organizations)	2003; 2004; 2002-2010	160,000	1
	(b) Promote integrated landscape planning including sustainable agricultural areas around protected areas as hubs of development		MET, MAWRD, MLRGH, MLRR, MME (other institutions and natural resource users)	2003; 2002-2010	5,000,000	1
	(c) Investigate and promote tourism potential in support of biodiversity and landscape conservation • Develop case studies of good and poor management • Work with tourism sector (community, private and public stakeholders) to ensure monitoring and good practice in both consumptive and non-consumptive forms of tourism	chapter 2	MET (Nacobta, Nath, conservancies, Rössing Foundation, MTI, MME, CBNRM initiatives, NGOs, interested parties)	2008; 2000-2010	120,000	2
	(d) Identify and reduce or remove policy impediments to sustainable land management	chapter 7	MET and MAWRD (MLRR, MRLGH, NNFU, NAU, DRFN, Nepru, Nangof, UNAM, PoN, other research and policy institutes)	2004	40,000	1

4.3. Manage biological diversity in agriculture through the adoption of ecologically, economically and socially sustainable agricultural practices	(a) Strengthen measures to conserve water and soil resources • Identify and apply best practices • Create incentives for good management practices	1	MAWRD, MET, MLRR, MRLGH (DRFN, UNAM, PoN, other research institutes)	2002; 2006; 2000-2010	6,000,000	1
	(b) Quantify and prioritise issues, areas, and needs relating to land conversion, clearing and management practices • Generate time-series maps of land conversion	1, chapter 3	MET/NBP, NRSC (MAWRD, MLRR, MRLGH, DRFN, UNAM, PoN, other institutes)	2003 - 2010	80,000	2
	(c) Enact and apply the Environmental Management Act to farming systems • Synthesise the policy information relevant to farming systems • Communicate relevant information in user friendly format • Implement policy directives	1, chapter 7	MET and MAWRD	2002	nominal	1
	(d) Establish and enforce environmentally appropriate policy on agricultural fencing • Assess environmental (including biodiversity) and socio-economic impacts of uncontrolled fencings • Develop best practice scenarios	1, 11	MAWRD and MET (NAU, NNFU, NAB, DRFN, CRIAA, NBP)	2000-2004	1,200,000	2
	(e) Manage bush-encroachment • Take immediate measures to prevent further bush encroachment – Initiate experimental and historical analysis in LTER plots to clarify causes of encroachment – Define desirable management states for optimal biodiversity and agricultural value, and revise a new data emerge – Adapt and expand existing extension programme for farmers and land users • Reduce total area of bush encroachment – Identify target areas where bush clearance is possible and desirable – Analyse biodiversity impacts of clearing methods in paired LTER plots – Selectively clear target areas with low-impacts appropriate methods • Establish market channels for products of bush clearing – Survey current markets and marketing channels – Negotiate incentives	1, chapter 3	MET/ BEP and MAWRD (Napcod, Woodland Management Council, DoF, NAU, NNFU, NAB, Charcoal Producers' Association, ABWG, TBWG, EONN)	2001-2010	500,000	1
	(f) Lessen the frequency and negative impacts of uncontrolled veld fires on biodiversity • Train farmers to apply controlled veld fires as management tool in appropriate areas • Create awareness on the negative impacts of uncontrolled veld fires • Establish case studies evaluating the impacts of veld fires on biodiversity and soil fertility	1	MAWRD and MET/ DoF, NBP (NAU, NNFU, MRLGH, MLRR, NRSC, conservancies)	2000-2010	4,230,000	2

	(g) Investigate and implement wider use of integrated pest management • Establish and finance Integrated Pest Management (IPM) Unit within MAWRD • Raise awareness about IPM	1, 10	MAWRD (NMN, MET, DWA, MFMR, FAO, DanChurch Aid)	2002-2005	1,200,000	1
	(h) Establish a database on desirable alien organisms • Research into alien organisms of agricultural interest • Conduct EIA on potential introduction of such species • Promote potential organisms for usage on trial bases	1	MAWRD/ DART, NBRI (NBP, NMN, DEES, UNAM)	2001-2010	705,000	2
	(i) Define and implement sustainable agricultural practices	1	MAWRD and MET	2003; 2000-2010	100,000	1
	(j) Review socioeconomic and agricultural policies impacting on biodiversity conservation • Analyse existing policies and legislation for their potential negative impacts but also incentives for sustainable use and conservation of biological diversity • Make recommendations for improvement of policy and legislative frameworks • Recommend strategies for implementation of supportive policies and legislation	1, chapter 7	MAWRD/ DoP	2001-2010	100,000	1
4.4. Promote sustainable forest management practices	(a) Streamline legislation, enforcement and procedures for forest biodiversity conservation • Consolidate legal tools • Implement efficient enforcement and reporting procedures (include all law enforcement officials, appoint honorary forest officers)	8, chapter 7	MET (MAWRD, MLRGH)	1999-2002	72,000	1
	(b) Establish interim, fast-track forest preservation and management areas • Enforce Preservation of Trees and Forests Ordinance near rivers and on dunes • Negotiate regional forest agreement with landholders • Develop procedure on a regional level	8	MET/ DoF, NBP, DSS, DPWM (MRLGH, MLRR)	2000-2003		1
	(c) Develop appropriate units and management systems for forest conservation • Develop consistent conservation categories • Develop "off reserve" management categories • Develop mechanisms to incorporate value/function of conservation area	8, 1	MET/ DoF, NBP, DSS, DPWM (landholders)	2004		2
	(d) Development of guidelines for forest biodiversity data analysis • Develop user-friendly spatial analysis interface for NFIP and Tree Atlas databases • Collate and review examples of biodiversity analysis • Test value of different databases for forest biodiversity assessment	8, chapter 3	MET/ DoF, NBP (MAWRD/ NBRI)	1999-2002	66,000	1
	(e) Assess forest biodiversity trends and patterns • Provide logistic support to NFIP • Identify and target gap areas not covered by national programmes (NFIP, Vegetation Mapping Project, Environmental Profiles)	8	MET/ DoF and NBRI (Tree Atlas Project, National Herbarium, MAWRD)	1999-2002		2

	(f) Establish and initiate collection of data on forest biodiversity indicators • National: select appropriate remotely sensed indicators • Local: test (monitor) – landscape function analysis – CBNRM indicators – socio-economics and opportunity costs. – sets of indicators (e.g. disturbance, mature forest and forest dependent species) • Structural and habitat heterogeneity	8, 13, also chapter 3	MET/ DoF, NBP (DSS, EMIN, EIS, Napcod, CBNRM)	2000-2005	217,000	1
	(g) Development of conservation management criteria and guidelines Further assess Protected Area Network: • Representation of forest types in Protected Area Network • Areas under threat • Evaluate validity of previous recommended areas	8, 1	MET/ DoF, NBP, DSS, DPWM (MAWRD, MLRR, MLRGH)	1999-2002		1
	(h) Facilitate community participation in planning, design and management of forest biodiversity conservation initiatives • Provide biodiversity input to management plans in process and to be developed • Declare buffer zones, corridors and zoning • Development of specific forestry management plans • Fire management strategies and plans • Negotiate agreements with landholders with incentives for forest biodiversity-friendly management • Negotiate and gazette declarations under Mountain Catchment Area Act • Establish community liaison officers, forestry councils, links with non-governmental organisations	8, chapter 2, chapter 9	MET/ DoF, DSS, DPWM (Regional Councils, MAWRD)	2000-2004		1
	(i) Establish, facilitate and evaluate relevant research & monitoring programmes on topics such as: • Forest cover • Fire impact • Effectiveness of management and conservation strategies • Forest biodiversity in relation to environmental changes • Socially and economically acceptable alternatives to excessive use of forest products (e.g. alternative fencing materials)	8, chapter 3, chapter 2	MET/ DoF, NBP and DSS (Napcod, MAWRD, NBRI, UNAM, PoN)	2000-2003		2
	(j) Create awareness about the importance of forest biodiversity in rural and national development • Develop active mechanisms for installing importance of biodiversity in schools and communities • Pamphlet on funding sources for biodiversity for government agencies and NGO's	8, chapter 7	MET/ DoF and NBP (NEEN, MBESC, MHEIEC, UNAM, PoN)	2000-2002		

4.5. Promote sustainable desert, savanna and woodland management practices	(a) Develop and implement integrated and intersectoral policy framework for sustainable natural resource management and biodiversity conservation • Review existing policies (agriculture, combating desertification, water, forestry, wetlands, protected areas, land-use etc.) and distil one concise prioritised integrated strategic policy framework that addressed such cross-cutting issues as: – Devolution of management – Local management institutions – Incentives and regulatory framework – Partnerships and collaboration – Integrated and cross-sectoral approaches – Rationalise with BD & CCD conventions • Draw up implementation plan for strategic framework, focussing on a few key interventions • Implement plan, as pilot initiative in carefully selected sites, with monitoring, adaptive management and information dissemination	13, chapter 1, chapter 7	MET/DEA (all line ministries, Napcod, CBNRM, other relevant activities)	2001-2003/2010	912,000	1
	(b) Evaluate impacts on natural resource base, ecological processes and biodiversity of different land-uses and management systems • Review and synthesise existing information and identify gaps • Initiate focused studies on impacts of land uses and management systems and recommend improvements and alternatives	13, SA 4.1.	BDTF (research partners, all line ministries, UNAM)	2001-2003	140,000	1
	(c) Establish a comprehensive monitoring and inventory information system • Form partnerships with key institutions and programmes, e.g. CBNRM Conservancy programme, CANAM, Napcod, Bush Encroachment, SOER, and establish joint/shared monitoring systems and information exchange (through metadatabase, e.g. EIS, etc) • With relevant partner organisations build and streamline compatible and accessible databases and information systems • Support focused information collection (including specimen, atlas and other appropriate methods) and curation • Establish technical analytical "biodiversity think tank" to commission analyses, review information, prioritise needs and identify critical interventions that are needed – to be accountable to BDTF	13, chapter 3, EONN, EMIN, chapter 9	BDTF (identified partners and core 'think tank' group)	2002-2010	2,145,000	2
	(d) Expand the protected area network	chapter 1	MET, MME, MLRR (all stakeholders)			

	(e) Promote expansion of appropriate models of sustainable natural resource management and biodiversity protection • Promote accountable community mechanisms, e.g. conservancies, to build capacity and empower rural people in sustainable land and resource management • Promote appropriate land-use options based on land-use planning, and consider creation of incentives for appropriate land-uses • Identify and promote opportunities for transboundary collaboration across shared ecosystems, sensitive habitats, important biotic assemblages, migration routes and genetic corridors	chapter 1, chapter 2	BDTF (CBNRM, "Every River Has Its People Project," partners in transboundary areas)	2000-2010	outside funds	2
4.6. Protect and maintain essential ecological functions and the biological diversity of Namibia's endemic-rich mountains ecosystems	(a) Rank quantitatively our state of knowledge of Namibian mountain ranges and inselbergs • Collate biotic and abiotic information on prioritised mountains • Establish EONN sites at prioritised (best known) mountains	17, chapter 3	BDTF (NBRI, NMN, MME, Mountain Club)	2002	nominal	2
	(b) Elaborate research and monitoring framework • Develop research and monitoring framework to fill priority gaps	17, chapter 3	NBP/ MEG			
	(c) Implement inventory and ecological process research on biodiversity in identified priority mountain areas • Undertake inventory and monitoring of poorly known taxa in priority mountains • Research mountain ecological processes in relation to surrounding terrain and rainfall • Assess impacts of climate change on species diversity, distribution and population viability, particularly mesic-adapted plants • Promote research collaboration with other institutions	17, chapter 3, chapter 1	BDTF (NBRI, UNAM, Raleigh International, Mountain Club, NMN, Weather Bureau, National Monuments Council)	2000-2005	155,000	2
	(d) Understand biogeographic status of Namibian mountains • Assess and review phytogeographic zones and the role of mountains as refugia for biodiversity • Undertake reptile biogeographic review of mountains • Undertake a data-gap analysis of major taxa on mountains, and implement a research process to fill such gaps	17	BDTF, NBRI, NMN, MME	2001-2004	75,000 +	2
	(e) Assess patterns of endemism on mountains • Review and synthesise data on mountain endemic taxa • Undertake data-gap analysis of endemic taxa on mountains, and implement a research process to fill such gaps	17, chapter 1	BDTF, NBRI, NMN	2001-2004	110,000	2
	(f) Promote scientific and popular information on mountain research activity to create awareness of the importance of Namibia's mountains • Hold a multidisciplinary conference on Namibian mountains and publish proceedings • Produce popular information posters • Link information to National Biodiversity Programme website	17, chapter 7	NBP/ MEG (NMN, NBRI, MME)	2004	250,000	1

	(g) Determine mountain conservation priority areas based on research recommendations • Implement results of national and regional area-prioritisation analyses	Chapter 1	NBP/ MEG (NEEN)	2001	15,000	1

Abbreviations:
ABWG = Agricultural Biodiversity Working Group of the National Biodiversity Task Force, BDTF= National Biodiversity Task Force, BEP = Bush Encroachment Project, CANAM = Conservancies Association of Namibia, CBNRM = Community-based Natural Resource Management Programme, CBOs = Community-based Organizations, CRIAA = Centre for Research Information Action Africa; DEA = Directorate of Environmental Affairs, DEES = Directorate of Engineering and Extension Services, DoF = Directorate of Forestry, DoP = Directorate of Planning, DRFN = Desert Research Foundation of Namibia, DRM = Department of Natural Resource Management MET, DSS = Directorate of Scientific Services, DPWM= Directorate of Parks and Wildlife Management, EIS = Environmental Information Service Unit of MET, EMIN = Environmental Monitoring and Indicators Network of Namibia, EONN = Environmental Observatories Network of Namibia, FAO = Food and Agricultural Organization of the United Nations, GRN = Government of the Republic of Namibia, MAWRD = Ministry of Agriculture, Water and Rural Development; MBESC = Ministry of Basic Education, Sport and Culture, MEG = Mountain Ecosystems Group of the National Biodiversity Task Force, MET= Ministry of Environment and Tourism, MFMR = Ministry of Fisheries and Marine Resources, MHETEC = Ministry of Higher Education, Training and Employment Creation, MLRR = Ministry of Lands, Resettlement and Rehabilitation, MRLGH = Ministry of Regional and Local Government and Housing, MTI = Ministry of Trade and Industry, NAB = Namibian Agronomic Board, NACOBTA = Namibian Community-based Tourism Association, Nangof = Namibian NGO-Forum, Napcod = Namibia's Programme to Combat Desertification, Nath = Namibian Association of Tourism and Hospitality, NAU = Namibia Agricultural Union, NBP = National Biodiversity Programme, NBRI = National Botanical Research Institute, NEEN = Namibian Environmental Education Network, Nepru = Namibian Economic Policy Research Unit, NGOs = Non-governmental Organizations, NMN = National Museum of Namibia, NNF = Namibia Nature Foundation, NNFU = Namibian National Farmers' Union, NPC = National Planning Commission, NRSC = National Remote Sensing Centre, PoN = Polytechnic of Namibia, SOER = State of the Environment Reporting Project, TBWG = Terrestrial Biomes Working Group of the National Biodiversity Task Force, UNAM = University of Namibia

WG LF:
1=Agricultural Biodiversity Working Group, 3=Biosystematics Working Group, 7=Logframe for conserving biodiversity in conservation areas, 8=Forest Biodiversity Focal Group, 10=Alien Invasive Species Working Group, 11=Land Use, Management and Tenure Impacts Project Core Group, 13=Terrestrial Biomes Group, 17=Mountain Ecosystems Subgroup

Chapter 5. Action plan for sustainable wetland management

Overall objective: Strengthen the implementation of the Constitution of Namibia (Art. 95 L) by adopting measures improving the protection of wetland ecosystems, their biological diversity and essential ecological processes, as well as to improve the sustainability of wetland resource use and prevent wetland loss and degradation.

Strategic Aim	Activity	WG LF	Lead agency (key collaborators)	Timeframe	Estimated cost (N$)	Priority
5.1. Protect and maintain essential ecological functions and the biological diversity of Namibia's wetland ecosystems	(a) Effectively implement the Ramsar Convention on Wetlands of International Importance and the Convention on Biological Diversity, emphasising national ecological priorities • Establish in MET a productive Wetland/Ramsar Secretariat to work with the WWG • Develop and promulgate a consultative national wetlands policy • Develop and regularly update a wetlands inventory and a publicly accessible integrated wetlands database • Prioritise and protect vulnerable and important wetlands based on systematic criteria • Produce Ramsar site management plans	16	MET with WWG (NWRMR, MAWRD, DWA, WWF, MME)	2001-2005	690,000	1
	(b) Support best practices in wetland and catchment research and management • Monitor and research the state of Namibia's wetlands based on IBI • Hold international aquatic management, conservation and research conferences • Develop and publish manuals and keys for aquatic taxa • Conduct specialist training workshops and support appropriate tertiary training courses • Support appointment of aquatic invertebrate and fish taxonomists and training of local counterparts	16, chapter 9, chapter 3	MET with WWG (SASAQS, NBRI, SOER, NMN, PoN, UNAM, Humboldt University)	2001-2010	1,140,000	1
	(c) Map key wetland habitats and resources • Carry out biotope mapping of wetlands • Conduct ecological surveys of priority wetlands twice yearly • Conduct opportunistic surveys of ephemeral wetlands • Link maps and survey data to wetlands database and outputs	16, chapter 1, chapter 3	MET with WWG, DWA (NMN)	2001-2010	600,000	2

	(d) Integrate the principle of ecological water needs in planning and implementation • Reflect this principle in municipal, local, regional and national plans • Estimate ecological water needs of all major perennial and ephemeral rivers and the oshanas • Provide extra monitoring and adaptive management infrastructure	chapter 1, chapter 2	DWA and NamWater (BDTF institutional partners, international hydrologists and other experts)	2004; 2008	850,000	1
	(e) Evaluate the impact of disturbed river flow regimes on landscapes, especially wetlands at river mouths • Establish EONN and DWA monitoring equipment at all Ramsar sites • Focus on flow regimes in the lower Orange River • Evaluate ecological and socio-economic impacts of disturbed flow regimes	chapter 1, chapter 2, chapter 3	DWA and MET (BDTF institutional partners, regional partners)	2004; 2005	1,000,000	1
5.2. Create additional wetland conservation areas	(a) Create additional wetland reserves • Identify unique wetlands, determine priority sites and assess appropriate conservation status • Negotiate management terms, plans and benefits for in situ conservation with landholders • Evaluate implementation of management plan biannually	16, chapter 1	MET with WWG	Top 5 priority sites by 2003, top 10 by 2007, top 15 by 2010	1,130,000	1
	(b) Establish effective transboundary wetland conservation • Identify sites and negotiate management terms, plans and benefits • Evaluate implementation of management plan biannually • Promote international cooperation in wetland management, conservation, research, policy and public relations	16, chapter 1, chapter 8	MET (DWA, WWG)	Top 5 priority sites by 2006, evaluate 2010	400,000	2
5.3 Promote integrated land and water management	(a) Promote landscape and catchment planning for mountain, woodland and wetland management • Establish and implement joint planning fora between DWA, NamWater, MET (DoF, DPWM), MIRR, MRLGH and others	chapter 1, chapter 2, chapter 4, chapter 7	DWA and MET (MIRR, MRLGH, MME, NamWater)	2003	10,000	1
	(b) Promote environmentally sound land uses in the vicinity of wetlands and reduce harmful or polluting land use practices • Emphasize landscape approach to land use planning • Integrate wetlands and protected areas in the broader landscape • Produce a popular booklet on wetlands and their ecological roles	chapter 3, chapter 9	MET and MIRR (DWA, MAWRD, MRLGH, MTI, MME)	2003	180,000	1
5.4. Raise awareness of wetland values and threats	(a) Promote public understanding of wetlands and participation in wetland management • Prepare and publish popular and technical books on wetlands of Namibia, for schools, tourists and scientists • Promote community level participation in wetland conservation and management • Promote catchment approach to water and wetland management • Organise World Wetland Day events and publicity • Brief policymakers, give input to regular "Update" editions	16, chapter 9	WWG (Wetlands Secretariat, DWA, MET, MFMR, Caprivi FFRC, NWRMR, DRFN)	2010	670,000	1

	(b) Promote the economic and other values of wetland ecosystems and incentives for good management • Conduct and popularize a resource economic valuation of Namibian wetland systems • Identify incentives and incorporate in policy revisions	chapter 1, chapter 2, chapter 4, chapter 7, chapter 9	MET/DEA/NBP and DWA (NamWater, local communities, landholders, Nepru)	2008	640,000	1

Abbreviations:
Caprivi FFRC = Caprivi Freshwater Fish Research Centre, DEA = Directorate of Environmental Affairs, DoF = Directorate of Forestry, DPWM = Directorate of Parks and Wildlife Management, DRFN = Desert Research Foundation of Namibia, DWA = Department of Water Affairs, MAWRD = Ministry of Agriculture, Water and Rural Development, MET = Ministry of Environment and Tourism, MFMR = Ministry of Fisheries and Marine Resources, MLRR = Ministry of Lands, Resettlement and Rehabilitation, MRLGH = Ministry of Regional and Local Government and Housing, NamWater = Namibian Water Corporation, NBRI = National Botanical Research Institute, NMN = National Museum of Namibia, NWRMR = Namibia Water Resources Management Review, PoN = Polytechnic of Namibia, SASAQS = Southern African Society of Aquatic Scientists, SOER = State of the Environment Reports, UNAM = University of Namibia, WWF = World Wildlife Fund, WWG = Wetlands Working Group of the National Biodiversity Task Force

WG LF:
16 = Wetlands Working Group of Namibia

Chapter 6. Action plan for sustainable coastal and marine ecosystem management

Overall objective: Strengthen the implementation the Constitution of Namibia (Art. 95 L) by adopting measures to improve the protection of coastal and marine ecosystems, biological diversity and essential ecological processes, as well as to improve knowledge, awareness, and the sustainability of resource use.

Strategic Aim	Activity	WG IF	Lead agency (key collaborators)	Timeframe	Estimated cost (N$)	Priority
6.1. Evaluate and reduce impacts of resource use activities on the coastal and marine environment	(a) Implement research and monitoring programmes in support of sustainable use of marine and coastal resources • Synthesize existing information and identify gaps needing focused research • Expand experimental fishing research (net-types, escape grids, fish behaviour etc) to reduce by-catch and improve sustainable harvesting • Investigate and monitor the impact of longlining in Namibian waters on albatrosses and other large pelagic seabirds • Continue assessment of marine mining impacts on benthic/ intertidal biota • Continue assessment of water quality changes associated with mining, shipping and harbour use • Implement top priority research and monitoring activities identified as gaps	6, chapter 2, chapter 3	MFMR (MET/NBP, ICZMC, mining, shipping and fishing industries, MWTC, Namport, MME)	2001 – 2010	2,500, 000	1
	(b) Strengthen regulations and enforcement measures to reduce harmful environmental impacts • Consistently enforce by-catch regulations, penalties and sanctions • Formulate and enforce regulations controlling effluent discharge to the sea	6, chapter 2, chapter 7, chapter 8	MFMR, MME, MET/NBP (MWTC, DWA, MoJ, Namport, mining, shipping and fishing industries, municipalities	2001- 2010 ongoing		1
	(c) Establish appropriate management structures • Establish coastal and marine biodiversity coordinator post (CMBC) at National Marine Information & Research Centre • Continue efforts towards harmonious co-management of coastal and marine resources	6, chapter 8, chapter 10	MFMR, NBP/MET, BCLME & ICZMC (MME, MWTC, industries, municipalities)	June 2002 2001-2010	1,950,000	1
6.2. Bring policy and legislation in line with CBD and strengthen legal framework for aquaculture activities	(a) Review and make recommendations on existing policy and legislation to harmonise with the CBD • Revise policy and legislation if needed • Promulgate detailed regulations to the Aquaculture Act	6, chapter 7	MFMR (MoJ, MME, ICZM, MWTC Maritime Directorate, MET	Dec 2003	10 000	1

	(b) Enforce procedures in the Aquaculture Act • Establish aquaculture zones in line with planning recommendations • Co-ordinate zonal environmental impact assessments for aquaculture	6, chapter 7	MFMR (MET, MME, MoJ, proponents, consultants)	Dec 2002	85 000	1
6.3. Maintain existing marine protected areas (MPAs) and proclaim new areas	(a) Develop and enforce appropriate regulations for protection of MPAs	6, chapter 1, chapter 7	MFMR & BCLME	Dec 2003		1
	(b) Establish new MPAs around the Namibian islands in line with planning recommendations and the Sperrgebiet Land Use Plan, via inventories, management plan development, and legal proclamation	6, chapter 1	MFMR (MME, BCLME, MET, MoJ, ICZM, Lüderitz Forum)	Dec 2003		2
	(c) Establish unexploited sanctuary areas as scientific baseline sites	6, chapter 1, chapter 3	MFMR (BENEFIT, BCLME, MME)	Dec 2002		1
	(d) Harmonize MPAs with coastal Ramsar sites and terrestrial parks	6, chapter 10	MFMR with MET (MME)	Dec 2004		3
6.4. Reduce pollution of coastal waters	(a) Comply with Marpol standards	6, chapter 3	MWTC (MFMR, MEI)	Jan 2004		2
	(b) Strengthen early warning systems for harmful algal blooms and pollutants, via biomonitoring organisms and LTER sites	6, chapter 3, chapter 4	MFMR (MET, MWTC, Namport, industries)	Jan 2005		1
	(c) Include alien invasive species and genetically modified organisms in routine monitoring activities and LTER sites	6, chapter 4	MFMR & MWTC (Namport, MET, MHETEC, NABA, shipping industry)	Dec 2002	60 000	3
6.5. Strengthen taxonomic collections and databases	(a) Strengthen and computerize central specimen collections; hold and update duplicate specimen databases at National Museum and MFMR	6, chapter 3	National Museum & MFMR (BCLME)	June 2003	25 000	2
	(b) Expand biogeographic studies of coastal and marine species, e.g. deep water benthic species	6, chapter 3, chapter 9, chapter 2	MFMR, BCLME, BENEFIT, mining industry	Nov 2003-Nov 2006	300,000	3
	(c) Strengthen human resource capacity in taxonomy	chapter 9	MFMR, NBP, Museum, (UNAM, PoN, others)	2006	100 000	1
6.6. Control and promote marine bioprospecting	(a) Build awareness and strengthen capacity to regulate and promote marine bioprospecting in line with national policy and legislation	6, chapter 2, chapter 9	MFMR &MET (pharmaceutical, fishing, biotechnology industries)	Jan – Dec 2003		2
6.7. Strengthen integrated coastal zone management	(a) Strengthen national integrated coastal zone management fora to ensure coordination and co-management in development of new initatives	6, chapter 7, chapter 10	MFMR, ICZMC, BCLME (MET, MRLGH, MME, coastal zone industries, municipalities)	2002-2006		1
	(b) Strengthen the role of biodiversity conservation and sustainable use in integrated coastal zone management	6, chapter 2	MET, MFMR, ICZMC (BCLME)	Jun 2002-Dec 2003		1

6.8. Improve information and awareness of coastal and marine biodiversity	(a) Establish public awareness programme • Establish information officer post at National Marine Research and Information Centre • Prepare and evaluate materials for distribution to target groups including via MFMR, BCLME and/or NBP websites	6, chapter 9	MFMR & MET (BCLME, ICZMC)	Dec 2003 – Dec 2005	360,000	1

Abbreviations:
BCLME = Benguela Current Large Marine Ecosystem Programme; BENEFIT = Benguela Environment Fisheries Interaction and Training Programme; CBD = Convention on Biological Diversity; CMBC = Coastal & Marine Biodiversity Coordinator; DWA = Department of Water Affairs; ICZMC = Integrated Coastal Zone Management Committee; LTER = long-term ecological research; MAWRD = Ministry of Agriculture, Water and Rural Development; MET = Ministry of Environment & Tourism; MFMR = Ministry of Fisheries & Marine Resources; MHETEC = Ministry of Higher Education, Training and Employment Creation (Biosafety Registrar); MME = Ministry of Mines & Energy; MoJ = Ministry of Justice (legal drafting); MWTC = Ministry of Works, Transport & Communication (Directorate of Maritime Affairs); NABA = Namibian Biotechnology Alliance; Namport = Namibian Port Authority; NBP = National Biodiversity Programme

WG LF:
6=Coastal and Marine Biodiversity Group

Chapter 7. Action plan for integrated planning for biodiversity conservation and sustainable development

Overall objective: Strengthen appropriate mechanisms and frameworks for the integration of sectoral development planning and implementation activities at local, regional, national and international levels to enhance prospects for sustainable development in Namibia

Strategic Aim	Activity	WG IF	Lead agency (key collaborators)	Timeframe	Estimated cost (N$)	Priority
7.1. Improve mechanisms for integrating sectoral planning and implementation activities	(a) Promote permanent, effective mechanisms for intersectoral planning and policy formulation • Actively participate in intersectoral NDP planning sessions, support inter- and intra-ministerial planning and implementation fora, such as the "Natural Resource Management Forum" of MET with relevant information and interaction • Foster and support inter-Directorate integrated planning and implementation of interventions within MET and other natural resource-based line ministries • Promote intersectoral inputs to the policy and planning process through NGOs and fora working intersectorally, e.g. Forum for Integrated Resource Management (FIRM)	Chapter 7 Chapter 10	MET/DEA (current and new sustainable development partners, including all line ministries)	NDP planning cycle Dec 2002, then ongoing Ongoing Ongoing	65 000 pa	1
	(b) Promote awareness among national planners of biodiversity as Namibia's capital resource base, on which economic development and livelihoods depend • Develop relevant awareness and training strategies for target groups • Support national planners in designing biodiversity-sensitive development plans	Chapter 10 Chapter 9	MET/DEA (NPC, GLOBE, NEEN)	July 2003 Ongoing	120 000 pa	1
	(c) Promote dialogue on experiences and best practices in the conservation, management and sustainable use of biological resources amongst ministries, NGOs and other institutions • Host regular national "environment and sustainable development" conferences • Provide synthesis of best practices and make available in relevant format, e.g. in "Update" briefing sheets • Organise Permanent Secretary Roundtable meetings on topical issues	Chapter 3 Chapter 9	MET/DEA (WSSD preparatory forum – if to continue)	Sept 2004, then biannually Quarterly	120 000 for 4 yrs 20 000 pa	2

7.2. Review and streamline policy and legal frameworks	(a) Develop and implement an integrated policy framework for sustainable natural resource management, in line with the Convention on Biological Diversity and related treaties • Review existing policies (agriculture, combating desertification, water, forestry, wetlands, protected areas, land-use etc.) and distil one concise prioritised integrated strategic policy framework to address cross-cutting issues: – Devolution of management – Local management institutions – Incentives and regulatory framework – Partnerships and collaboration – Integrated and cross-sectoral approaches – Rationalise with CBD, CCD & UNFCCC conventions • Draw up implementation plan for strategic framework, focusing on a few key interventions • Implement plan as a pilot initiative in selected sites, with monitoring, adaptive management and information dissemination • Consider CBD-promoted ecosystem approach	13, chapters 1, 7, 8, 9	MET/DEA, DPWM, DoF (all line ministries, MoJ, CCL, National Assembly, National Council, Cabinet)	2003; 2004; 2007	750 000	2
7.3. Strengthen Government's decentralisation process through enhanced regional biodiversity and environmental management	(a) Together with MRLGH devise a framework for addressing biodiversity and environmental management most effectively in the decentralisation process • MET & MRLGH roundtable to draw up key points for framework, incl. regional governors and councillors (e.g. modelled on integrated coastal zone management forum) • Based on recommendations MET defines its support role • MET with other relevant partners (i.e. MAWRD) develops strategy for regional interventions, especially the role of the regional offices • Target all extension personnel of relevant ministries to raise awareness of biodiversity and environmental sustainability issues		MET/DEA (MRLGH, Regional Councils and Council Associations)	Nov 2002 March 2003 March 2003	16 000	1
	(b) Support strengthening of the biodiversity and environmental management capacity at MET's regional offices' • Revisit current profiles of regional MET offices and their capacities • Ensure that state-of-the-art biodiversity management concepts are being debated and implemented at that level (involves focused training workshops) • Help draw-up and implement capacity strengthening strategy where appropriate	Chapter 9	MET/DPWM (MET/DEA, APAI)	July 2002; Mar 2003; Dec 2004	1,200,000 2,200,000	1

	(c) Explore potential to devise mechanisms for devolution of biodiversity management responsibility and authority to natural resource manager level • Increase biodiversity management capacities in regions e.g. through interactions and support of regional management bodies such as ORNAMAC – Review existing regional natural resource management structures and local level devolution mechanisms – Define potential role of National Biodiversity Programme to improve capacity to support management of biodiversity at that level – Link with existing on-the-ground natural resource management initiatives and extension personnel for dissemination of biodiversity information • Synthesise lessons learned from CBNRM and related "grassroots" approaches and foster broader-scale implementation – Review approaches in terms of improved and sustainable biodiversity management – Make recommendations for broader-scale implementation	Chapter 7	MET/ DPWM/ DoF/ DEA	2004	100,000	1
7.4. Foster partnerships between GRN, NGOs and the private and public sectors	(a) Identify, and in partnership plan, how private and public entities can support the common vision for biodiversity and environmental management in Namibia • Clear strategies for outsourcing implementation activities • Public-Private Partnerships	Chapters 7, 9, 10	MET/ DEA/ NBP, NPC, NGOs, private sector	2006	750,000	1

Abbreviations:
APAI = African Protected Areas Initiative), CBD = Convention on Biological Diversity, CBNRM = Community-based Natural Resource Management, CCD = Convention to Combat Desertification, CCL= Cabinet Committee on Legislation, DEA = Directorate of Environmental Affairs, DoF = Directorate of Forestry, DPWM = Directorate of Parks and Wildlife Management, FIRM = Forum for Integrated Resource Management, GLOBE = Global Legislators' Organization for a Balanced Environment, GRN = Government of the Republic of Namibia, MAWRD = Ministry of Agriculture, Water and Rural Development, MET= Ministry of Environment and Tourism, MoJ = Ministry of Justice, MRLGH = Ministry of Regional and Local Government and Housing, NBP = National Biodiversity Programme, NDP = National Development Plans, NEEN = Namibian Environmental Education Network, NGOs = Non-governmental Organizations, NPC = National Planning Commission, ORNARMAC = Oshana Region Natural Resource Management Committee, UNFCCC = United Nations Framework Convention on Climate Change, WSSD = World Summit on Sustainable Development

WG LF:
13=Terrestrial Biomes Group

Chapter 8. Action plan for Namibia's role in the larger world community

Overall objective: Strengthen Namibia's role in biodiversity conservation and environmental management within SADC, Africa and throughout the world by building and maintaining strong international interactions and partnerships.

Strategic Aim	Activity	WG IF	Lead agency (key collaborators)	Timeframe	Estimated cost (N$)	Priority
8.1. Support the political will and commitment to the implementation of Namibia's obligations in respect to international treaties relevant to the conservation and sustainable use of biodiversity	(a) Ensure that Namibia signs and ratifies existing international conventions and protocols that relate to the conservation of biodiversity	Chapter 8	DEA conventions unit (MTI, MAWRD, MME, MFAIB)	Dec 2003; Dec 2004; 2000-2010	90,000	1
	(b) Review implementation of those international treaties relevant to the conservation and sustainable use of biodiversity to which Namibia is a party					
	(c) Enact and effectively enforce appropriate legislation to promote the conservation and sustainable use of biodiversity					
	(d) Promote the development and use of mutually supportive trade and environmental policies for the conservation and sustainable use of biodiversity					
	(e) Promote and support as appropriate the development of bilateral or multilateral agreements and harmonization of policies and legislation within the SADC region on the conservation and sustainable use of shared or migratory natural resources • Regionally streamlined biosafety and biotrade frameworks, phytosanitary and alien invasive species controls, etc • Transboundary parks, river catchments and marine ecosystems • Transboundary ecotourism development plans • Migratory species, etc					
	(f) Strengthen MET – MFAIB collaboration and expertise in negotiations					
8.2. Wisely use international assistance, while improving national capacity for sustainable environmental management	(a) Ensure effective consultation with and agreement of relevant local stakeholders in all natural resource-related development efforts and international assistance	Chapter 9 Chapter 8 Chapter 7, Chapter 10	DEA conventions unit (NPC, NNF, DRFN, other NGOs)	June 2003		1
	(b) Ensure that international assistance programmes to Namibia do not incur significant adverse impacts on our biological diversity • Undertake Strategic Environmental Assessments • Enact and enforce Environmental Management Act					

	(c) Maximise investment benefits from the currently favourable external funding climate for sustainable development, while investigating strategic and cost-effective ways to reorient the national development budget to sustainable development in the longer term • Keep environment/biodiversity on the national and SADC development agendas • Work with NPC • Identify long-term financial & economic cooperation strategies for environmental field • Biodiversity portfolio of Environmental Investment Fund					
	(d) Forge and continue effective cooperation with international partners to strengthen human, research and institutional capacity to conserve Namibian biological diversity					
8.3. Strengthen Namibia's role in international collaboration in biodiversity research and management within SADC, Africa and beyond	(a) Enhance international collaboration in research related to biological diversity • BIOTA • Other	Chapter 8	GTRC, NBRI, UNAM, BDTF	Ongoing to 2010	30,000	1
	(b) Build and maintain strong cooperative partnerships for biodiversity conservation and environmental management within SADC, Africa and throughout the world • Southern African Biodiversity Support Programme (SABSP) • SADC-wide desertification programme at DRFN – use as vehicle for biodiversity messages • Gobabeb Training & Research Centre – SADC Centre of Excellence in Desertification work – broaden and hook biodiversity messages • UNAM centre at Hentie's Bay – esp. marine biology • EEI – wildlife management • UNAM & PoN courses in NRM and SADC biodiversity MSc	Chapter 8	MET/NBP (SABSP, DRFN, GTRC, UNAM, PoN, Hentie's Bay Centre, EEI)	June 2004	60,000	2
	(c) Promote the sharing of information, best practices and expertise in biodiversity management in SADC at the senior policy, professional and research levels	Chapter 2 Chapter 8	MET/DEA (MAWRD, MTI, MHETEC, others)	Ongoing till 2010	10,000	1
	(d) Promote and support the appropriate designation of jointly managed protected areas along common boundaries to conserve shared biodiversity and resources	Chapter 1 Chapter 8	MET/DPWM, NBP, DSS, adjacent countries and regions	Dec 2004	20,000	2

Abbreviations:
BDTF= Biodiversity Task Force, DEA = Directorate of Environmental Affairs, DRFN = Desert Research Foundation of Namibia, GTRC = Gobabeb Training & Research Centre, MAWRD = Ministry of Agriculture, Water and Rural Development; MET= Ministry of Environment and Tourism, MFAIB = Ministry of Foreign Affairs, Information and Broadcasting, MHETEC = Ministry of Higher Education, Training and Employment Creation, MME = Ministry of Mines and Energies, MTI = Ministry of Trade and Industry, NBRI = National Botanical Research Institute, NGOs = Non-governmental Organizations, NNF = Namibia Nature Foundation, NPC = National Planning Commission, UNAM = University of Namibia,

Chapter 9. Action plan for building Namibia's capacity for managing biodiversity in support of sustainable development

Overall objective: To strengthen Namibia's human, institutional and national capacity to understand biodiversity and ecosystems, and to manage Namibia's natural resources and ecosystems appropriately.

Strategic Aim	Activity	WG IF	Lead agency (key collaborators)	Timeframe	Estimated cost (N$)	Priority
9.1. Promote public awareness of biodiversity conservation and sustainable resource use	(a) Develop and coordinate the implementation of an awareness strategy suitable for Namibia and pertinent to biodiversity issues • Prioritize pertinent issues, areas, hotspots, themes and organisms to be addressed. • Determine most appropriate approach i.e. language, media, level for each target group/community • Develop innovative ways to incorporate biodiversity issues of national importance in school and higher education curricula. • Develop and implement M Sc course in biodiversity at UNAM pertinent to Namibian circumstances • Identify topics to be addressed and most suitable type of resource • Develop appropriate resource materials for different target groups • Test resource materials and adapt as required • Disseminate resource materials to target groups through existing extension services and networks • Evaluate impact and effectiveness of resource materials used	Chapter 9	NBP and NEEN (MET, MBESC, MHEIEC, MME, UNAM, PoN, DRFN, other NGOs, NMN, NBRI, CRIAA, media, others)	Immediate	216,000	1
	(b) Promote community awareness, exchange and sharing of information • Identify target groups/communities (learners, educators, community organizations and leaders, extension workers within natural resource and education sectors) • Arrange and hold regular meetings with identified target groups / communities and provide feedback • Facilitate media events and exchange visits	Chapter 2 Chapter 9	NBP and NEEN (MET/DEA, identified target groups, media, MME)	Immediate, ongoing every 6 mo	5,000 initial 220,000 pa	1
	(c) Promote awareness of the potential of threats to biological resources among industry, producers and users • Identify the industrial and agricultural users and producers of biodiversity products • Assess products with economic potential and those at risk • Arrange and hold regular meetings with users and producers to make them aware of biotrade regulations, product potential and vulnerability and provide feedback	Chapter 2 Chapter 9	NBP and NEEN (MET/DEA, DSS, DPWM, DoF, DoT, MTI, MME, MAWRD, UNAM, CRIAA, NAU, NNFU, media)	Dec 2003; ongoing	60,000	1

	(d) Target decisionmakers specifically • Develop and implement mechanism of regular information updates via newsletters + media cover e.g.TV and radio slots, newspaper columns. • Produce videos, pamphlets and books to highlight specific, pertinent Namibian biodiversity issues • Improve fora for regular and effective information exchange	Chapter 2 Chapter 9	NBP and DRFN (NEEN, MET/DEA, media, corporate industry, BDTF)	Dec 2002	278,000 pa	1
9.2 Build capacity to manage biodiversity and sustainable development in Namibia	(a) Build capacity of teachers, extension workers, journalists and researchers to understand and act on biodiversity issues • Determine best approach i.e. direct training or training of trainers • Identify the target groups, scope, type of training needed and cost • Develop and test training modules • Conduct regular training workshops • Evaluate impact and effectiveness of training, adapt as needed	Chapter 2 Chapter 9	NBP (training institution, other partners)	Dec 2002; Dec 2003	443,000	1
	(b) Develop state-of-the-art tertiary education programmes addressing biodiversity sciences and management • UNAM / Humboldt University MSc course in biodiversity • PoN Natural Resource Management BTech & Diploma • other courses, especially in-house training modules		UNAM, Humboldt Univ (BDTF, PoN, DRFN, partner organizations and line ministries)	2005	750,000	1
	(c) Maintain and expand the professional human resource base for biosystematic services through training • Identify, prioritise and promote taxonomic posts and employment profiles, especially within GRN • Establish in-service, community and parataxonomy training schemes • Identify appropriate training institutions and establish criteria for evaluation of in-training performance and guidelines as to post-training obligations • Identify, evaluate, and recruit trainees • Establish internships and integrated intern projects • Establish post-training, emerging scientist small grant support • Establish forum for monitoring and evaluation of students, projects, and obstacles	Chapter 3	BSC and BDTF (training institution, NBRI, NMN, MET, MFMR, DRFN, MAWRD)	2001-2010	1,626,000	2
	(d) Improve capacity to disseminate biosystematic information • Determine and prioritise user groups and each group's information requirements • Provide incentives to improve appropriate information dissemination by biosystematists and technicians • Facilitate access to taxonomical databases • Create user-friendly, targeted information products (keys, annotated checklists, illustrated guides, websites) • Test and evaluate information products in target groups	Chapter 3	BSC (NBP, BDTF, NEEN, DRFN, NNF)	2001-2010	2,115,000	2

	(e) Maintain and improve the quality of biosystematic information • Introduce incentives to encourage greater international interest in Namibian taxonomy • Create pilot projects for community inventorying • Promote maintenance of core library resources • Compile and distribute short electronic newsletter • Ensure on-going consultation with all stakeholders • Promote institutional support from parent institutions	Chapter 3	BSC (NBP, BWG, NBRI, NMN, other partners)	2001-2010	1,725,000	2
	(f) Improve information availability and dissemination, raise awareness, and build capacity in the field of biodiversity conservation • Develop information dissemination strategy aimed at four targets: (i) politicians, (ii) technicians, (iii) general public and (iv) learners (school and tertiary levels) • Undertake a skills and capacity needs assessment for biodiversity conservation. Assess availability of national, regional and international training opportunities and bursaries • Develop capacity-building programme	13, chapter 7 chapter 9	**NBP and NEEN (info and awareness staff of GRN and NGOs)**	2001-2010	1,070,000	1
	(g) Take appropriate measures to build HIV/AIDS awareness into research and training programmes • Analyse the impact of HIV/AIDS on biodiversity management and conservation capacity in Namibia, together with AIDS workers • Regularly adapt training/ capacity building strategies accordingly	Chapter 2 Chapter 9	**MET/DEA (NANASO, UNAIDS awareness unit)**	2002-2010	45,000	2
	(h) Take appropriate measures to anticipate and mitigate projected declines in economic activities, e.g. subsistence and commercial agriculture, due to HIV/AIDS morbidity and mortality • Re-evaluate annually all relevant activities in this document affected by HIV/AIDS • Strengthen management structures to support the national strategic response to HIV/AIDS	Chapter 2 Chapter 9	**HIV/AIDS national structures (MET/NBP)**	2002-2010	45,000	2
9.3. Promote effective participation of disadvantaged groups in implementing this strategy	(a) Facilitate gender equality in resource management • Identify and promote women's particular knowledge of biodiversity (agricultural diversity, medicinal species, traditional food processing, natural resource management practices) • Encourage women to exchange experience, best practices and knowledge locally, nationally and regionally • Strengthen women's capacity to use resources sustainably • Promote the continued strength of Namibian women in biodiversity management, science, economics, rural development and related fields	Chapter 2 Chapter 9	MWACW (NBP, TKFG, traditional healers' & hawkers' associations, TAs, MTI, women's associations, CBOs, NGOs)	2001-2006	150,000	1
	(b) Increased involvement of black professionals and groups in biodiversity management	Chapter 9	NBP (MTI, MoL, MHSS, MWACW)	2001-2007	70,000	1

	(c) Specifically develop young professional programmes	Chapter 9	NBP (UNAM, PoN, DRFN/ SDP)	2001-2004	50,000	1
9.4 Strengthen communities to participate as equal partners, i.e. in biotrade and bioprospecting	(a) Develop an equitable benefit-sharing framework • Formulate sui generis legislation, regulatory structures and mechanisms for the protection of community intellectual property rights considering customary and other laws • Establish a mechanism to monitor the benefits for communities from agreements involving profitable use of their knowledge, and the application of prior informed in biodiversity framework consent (PIC) procedures • Identify new income-generating activities based on biological resources and empower local communities to manage those resources sustainably • In collaboration with local communities, establish a national Indigenous Knowledge Systems Fund, with clear guidelines on the fund's sources and potential uses, administrators, financial control, and role in resource management and cultural development	Chapter 2 Chapter 9	BDTF and CRIAA (MET Environmental Economics Unit, MTI, industries, other NGOs, NAU, NNFU, TAs, Environmental Legislation Project)	2001-2005	1,130, 000	1
	(b) Promote means for communities to share their knowledge with other partners • Create public awareness of and respect for the value of indigenous knowledge systems through the mass media and education curricula • In collaboration with local communities, identify and analyze existing customary codes of ethical conduct, and develop appropriate models of ethical conduct for research, access to knowledge, and the exchange and management of information on indigenous knowledge systems • **Initiate dialogue with local communities on:** - The content and process of relevant UN procedures and conventions such as CBD, CCD, UNFCCC; - Case studies on the impact of international agreements, such as TRIPs, UPOV, ITPGR, on local communities; - Local communities' rights over their knowledge and resources	Chapter 2 Chapter 9	NBP and NEEN (MET, MAWRD/ NBRI, DEES, MRLGH, MBESC, PoN, UNAM, NGOs, MTI, MHSS, NMN)	2001-2007	120,000	1
9.5. Strengthen and further develop Namibian centres of excellence in biodiversity related fields	(a) Foster Namibian institutions as centres of excellence and facilitate relevant partnerships with Government, parastatals, NGOs and other institutions • Gobabeb Training and Research Centre • National Marine Information and Research Centre • Etosha Ecological Institute • UNAM's Multidisciplinary Research Centre • UNAM's Henties Bay Centre of Marine Biology and Fisheries	Chapter 7 Chapter 9	GTRC, NatMIRC, EEI, UNAM, other institutes (NBP, MHETEC, NPC, MTI, NNF, MFMR)	2001-2010	780,000	1

Abbreviations:

BDTF= Biodiversity Task Force, BSC = Biosystematics Coordinator, CBD = Convention on Biological Diversity, CBOs = Community-based Organizations, CCD = Convention to Combat Desertification, CRIAA = Centre for Research Information Action Africa; DEA = Directorate of Environmental Affairs, DPWM = Directorate of Parks and Wildlife Management, DRFN = Desert Research Foundation of Namibia, DSS = Directorate of Scientific Services, EE = environmental education, GRN = Government of the Republic of Namibia, GTRC = Gobabeb Training & Research Centre, ITPGR = International Treaty on Plant Genetic Resources, MAWRD = Ministry of Agriculture, Water and Rural Development; MET = Ministry of Environment and Tourism, MFMR = Ministry of Fisheries and Marine Resources, MHSS = Ministry of Health and Social Services, MoL = Ministry of Labour, MTI = Ministry of Trade and Industry, MWACW = Ministry of Women Affairs and Child Welfare, NANASO = Namibian National Aids Organisation, NatMIRC = National Marine Information and Research Centre, NAU = Namibia Agricultural Union, NBRI = National Botanical Research Institute, NEEN = Namibian Environmental Education Network, NGOs = Non-governmental Organizations, NMN = National Museum of Namibia, NNF = Namibia Nature Foundation, NNFU = Namibian National Farmers' Union, SDP = Summer Desertification Programme of the Desert Research Foundation of Namibia, TAs = Traditional Authorities, TKFG = Traditional Knowledge Focal Group of the National Biodiversity Task Force, UNAIDS = United Nations AIDS Programme, UNAM = University of Namibia, UNFCCC = United Nations Framework Convention on Climate Change, UPOV = Union for the Protection of Plant Varieties

WG LF:
13 = Terrestrial Biomes Working Group

Chapter 10. Action plan for implementation and action of the NBSAP

Overall objective: Put appropriate and strong structures and mechanisms into place that will best support the successful implementation, adaptive management and evaluation of the National Biodiversity Strategy and Action Plan (NBSAP).

Strategic Aim	Activity	WG IF	Lead agency (key collaborators)	Timeframe	Estimated cost (N$)	Priority
10.1. Establish a strong, dedicated NBSAP Implementation Unit with full staffing and adequate resourcing in a strategic position	(a) Secure core staffing and funding with strong Ministry support	Chapter 10	MET (NPC, MoF)	Apr 2003, ongoing	400 000 pa	1
	(b) Strengthen use of intra-ministerial communication mechanisms within MET to support full integration of NBSAP activities in the Ministry's own planning	Chapters 7, 10	MET	Oct 2002, ongoing	5 000 pa	1
	(c) Develop detailed workplan for the NBSAP Implementation Unit, and clarify discrete roles of the IU and current National Biodiversity Programme Coordination Office	Chapter 10	MET (possibly NPC, OP, NBP institutional partners)	Sept 2002		1
10.2. Strengthen existing capacity of the National Biodiversity Task Force and National Biodiversity Programme Coordination Unit	(a) Appoint professionals and trainee professionals to the NBP Coordination Unit to support the work of the National Biodiversity Task Force, its working groups and partners	Chapters 9,10	MET	Nov 2002; Apr 2004	270 000 pa	1
	(b) Strengthen the efficiency and productivity of the National Biodiversity Task Force through strategic outsourcing of certain functions to implementation partners	Chapters 9, 10	MET (NBP institutional / implementation partners)	Sept 2002, ongoing	100 000 pa	1
	(c) Further develop Action Plans of working groups, defining clear outputs to be generated, and agree on and enforce mechanisms for monitoring and evaluation of performance	Chapter 10	MET/ NBP and working groups	June 2002, ongoing	3 000	1
	(d) Strengthen existing synergies among national programmes supporting key environmental conventions	Chapters 7, 8, 10	MET/ DEA and DSS	July 2002, ongoing	6 000	2
10.3. Strengthen the streamlining of biodiversity issues into national development planning and budgeting processes	(a) Identify or initiate effective mechanisms for integration and streamlining	Chapters 7, 10	MET/ NBP (NPC, NBP institutional partners)	2003-04 fin'cial yr, 2004-05, ongoing	21 000 pa	2
	(b) Continue NBSAP awareness-raising efforts at senior management and political level to build necessary support for successful implementation	Chapters 7, 8, 9, 10	MET/ NBP and all directorates	2004-05 fin'cial yr, ongoing	150 000	1
	(c) Work towards an increasing realignment of the national budget to invest in sustainable development, including through implementation of the NBSAP	Chapters 7, 8, 10	MET/ NBP and all directorates (MoF, NPC, NBP partners)	2007-08 fin'cial yr, ongoing	20 000	1
10.4. Develop a detailed financial implementation plan for the NBSAP	(a) Clarify the potential financing role of the Environmental Investment Fund and submit the NBSAP to its Board for review and prioritization	Chapter 10	MET/ NBP and all directorates, EIF Board	Sept 2002		1
	(b) Proactively seek financing from Government, multilateral, bilateral and private sources, including Government – donor roundtables to establish areas of interest	Chapters 7, 8, 10	MET/ NBP, EIF Board, GEF, bilateral sources and private sector	Oct 2001, Oct 2002, June 2005	6 000	1
	(c) Update and revise estimates of required financing for the period 2004-2010 as needed	Chapter 10	MET/ NBP and all directorates (MoF)	Oct 2004, ongoing annually		2

Abbreviations:

DEA = Directorate of Environmental Affairs, DSS = Directorate of Scientific Services, EIF = Environmental Investment Fund, GEF = Global Environment Facility, MET = Ministry of Environment and Tourism, MoF = Ministry of Finance, NBP = National Biodiversity Programme, NBSAP = National Biodiversity Strategy & Action Plan, NPC = National Planning Commission, OP = Office of The President

PART D

Annex A

Working Group and Team Members

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A great number of people representing various government ministries, NGOs, private institutions, industries and interested specialists have actively participated in and contributed to the working groups of the National Biodiversity Task Force (BDTF) over the past years. Most of them were also instrumental in developing this National Biodiversity Strategy and Action Plan (NBSAP).

The following persons have contributed to the working groups of the BDTF:

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Graham and Manda Wilson
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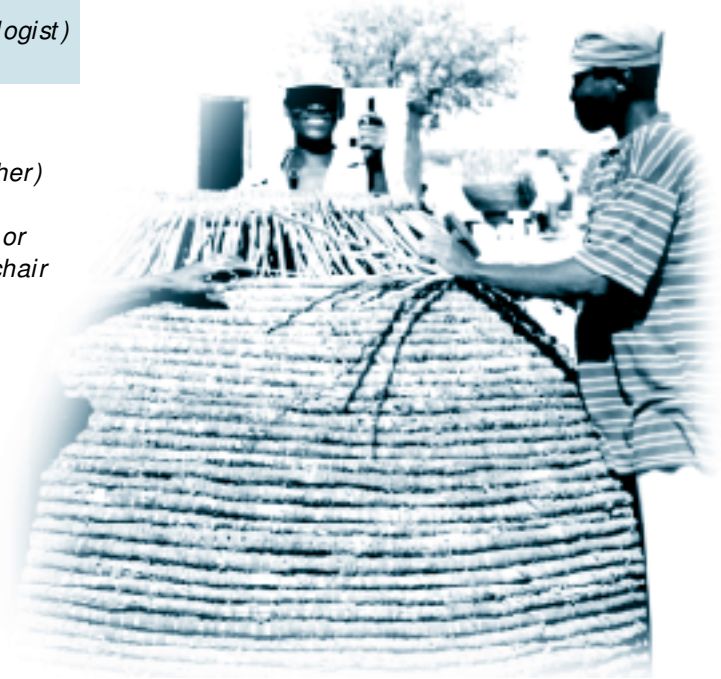

PART D

Annex B

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- **Dr Hu Berry,**
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- **Mrs Maria Kapere,**
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- **Mr Clemens Kwala,**
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- **Dr Pauline Lindeque,**
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  Ministry of Environment and Tourism
- **Mr Percy Misika,**
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- **Dr Fergus Molloy,**
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Annex C

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