Botswana Biodiversity Strategy and Action Plan

2004

Botswana Biodiversity Strategy and Action Plan

December 2004

Ministry of Environment, Wildlife and Tourism

Biodiversity Vision for Botswana

A nation in balance with nature, with fair access to biological resources, where the benefits deriving from the use of these resources are shared equitably for the benefit and livelihoods of current and future generations, and where all citizens recognize and understand the importance of maintaining Botswana's biological heritage and related knowledge and their role in the conservation and sustainable use of Botswana's biodiversity.

FOREWORD

As a party to the Convention on Biological Diversity (CBD), Botswana has an obligation to develop a Biodiversity Strategy and Action Plan (BSAP). Article 6 of the Convention calls upon each Contracting Party to "Develop national strategies, plans or programmes for the conservation and sustainable use of biological diversity or adapt for this purpose existing strategies, plans or programmes which shall reflect, *inter alia,* the measures set our in this Convention relevant to the Contracting Party concerned;" and "Integrate, as far as possible and as appropriate, the conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies."

In partial fulfilment of this obligation the Ministry of Environment Wildlife and Tourism, through the National Conservation Strategy Coordinating Agency, has thus developed the BSAP. This was achieved with financial assistance from the United Nations Development Programme – Global Environment Facility. Ecosurv and IUCN were engaged to undertake the consultancy.

The project started in July 2002. Stages in the development of the BSAP included a National Stocktaking exercise, community consultations and two National Stakeholder Workshops. Through this nationwide consultation process, the following Biodiversity Vision for Botswana was developed:

"*A nation in balance with nature, with fair access to biological resources, where the benefits deriving from the use of these resources are shared equitably for the benefit and livelihoods of current and future generations, and where all citizens recognize and understand the importance of maintaining Botswana's biological heritage and related knowledge and their role in the conservation and sustainable use of Botswana's biodiversity"*

The BSAP is based on 11 Strategic Objectives, which are designed to fulfil the Biodiversity Vision. These objectives call for:

(a) Better understanding of biodiversity and ecological processes;
(b) Long-term conservation and management of Botswana's biodiversity and genetic resources;
(c) Efficient and sustainable utilisation of all components of biodiversity in Botswana through appropriate land and resource use and management;
(d) An institutional environment, including human capacity, conducive to effect biodiversity conservation, sustainable use and management;
(e) Coping with environmental change and threats to biodiversity;
(f) Appropriate valuation/appreciation of biodiversity and raised public awareness on the role of biodiversity in sustainable development and public participation in biodiversity related activities and decision making;
(g) Fair access to biological resources and equitable sharing of benefits arising from the use of these resources;
(h) Safe industrial and technological development and other services based on national biodiversity resources for future prosperity;
(i) Improved availability and access to biodiversity data and information, and promotion of information exchange;
(k) Recognition of Botswana's and the Southern African Region's roles with regards to biodiversity; and
(l) Implementation of this Biodiversity Strategy and Action Plan.

Implementation of this strategy requires commitment and active engagement by all stakeholders. The best way to ensure active participation in this respect is to equip people with an awareness and understanding of the importance of maintaining biodiversity and why it is crucial that biodiversity components are used in a sustainable manner. Awareness raising and implementation activities have therefore been incorporated as important parts of the strategy. While the Ministry of Environment Wildlife and Tourism played a leading role in the development of the BSAP, its implementation belongs to all of us since the protection of our biodiversity is our responsibility as a nation. I therefore urge all of us in playing our individual and collective roles in implementing the BSAP for the sake of our beautiful and varied biodiversity and consequently for the overall protection of our environment for the benefit of both the present and future generations.

Onkokame Kitso Mokaila

Minister for Environment, Wildlife and Tourism

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

ABBREVIATIONS AND ACRONYMS

ABS	Access and Benefit Sharing
ARB	Agricultural Resources Board
BCA	Botswana College of Agriculture
BD	Biodiversity
BNTSC	Botswana National Tree Seed Centre
BRIMP	Botswana Rangeland Inventory and Monitoring Project
BSAP	Biodiversity Strategy and Action Plan
CBD	Convention on Biological Diversity
CBNRM	Community Based Natural Resource Management
CBO	Community Based Organisation
CHM	Clearing House Mechanism
CITES	Convention on International Trade in Rare and Endangered Species of Flora and Fau
CPR	Common Property Resources
CSO	Central Statistics Office
DMS	Department of Meteorological Services
EIA	Environmental Impact Assessment
EPP	Environmental Planning Programme
GMO	Genetically Modified Organisms
GOB	Government of Botswana
IAS	Invasive Alien Species
IBA	Important Bird Areas
IK	Indigenous Knowledge
IPA	Important Plant Areas
IPR	Intellectual Property Rights
IUCN	International Union for the Conservation of Nature
MCST	Ministry of Communications, Science and Technology
MEWT	Ministry of Environment, Wildlife and Tourism
MFDP	Ministry of Finance and Developing Planning
MLHA	Ministry of Labour and Home Affairs
MMEWA	Ministry of Mineral, Energy and Water Affairs
MOA	Ministry of Agriculture
MOE	Ministry of Education
MSP	Ministry of the State President
NBSC	National Biosafety Committee
NBSF	National Biosafety Framework
NCS	National Conservation Strategy
NCSA	National Conservation Strategy Coordinating Agency
NDP	National Development Plan
NGO	Non Governmental Organisation
PR	Public Relations
RD	Red Data
RDL	Red Data List
SADC	Southern African Development Community
SEA	Strategic Environmental Assessment
SOER	State Of the Environment Report
TAC	Technical Advisory Committee
TOR	Terms of Reference
UNCCD	United Nations Convention to Combat Desertification
WCMC	World Conservation and Monitoring Centre

Acronyms used in the Action Plan are listed separately in Chapter 5.

ACKNOWLEDGEMENTS

The Biodiversity Strategy and Action Plan is the product of the efforts of a huge number of people who have participated actively and willingly in the 18 month process. Special recognition goes to the BSAP team of experts, who have assisted in developing the strategy an action plan. They are:

Biodiversity Strategy and Action Plan consultancy team

Ms M. Madzwamuse	IUCN Botswana (Project Director)
Ms B. Farrington	Ecosurv (Pty) Ltd (Technical team leader)
Dr. S. Maphanyane	Tantalum (Pty) Ltd
Dr K Alexander	Eco-logic Support Services
Dr. J. Arntzen	Centre for Applied Research
Mr David Parry	Ecosurv (Pty) Ltd
Dr. O Tshosa	University of Botswana

We are also very grateful for all the support and constructive criticism received from the National Conservation Strategy Coordinating Agency, and in particular Ms D. Malepa and Ms S. Koketso, and from the BSAP Steering Committee and the National Biodiversity Authority whose members are listed below. A special thank you also goes to support staff at Ecosurv and IUCN Botswana.

Biodiversity Strategy and Action Plan Steering Committee

Mr T. Tsheko	Mokolodi Nature Reserve - Chairperson
Mr G. Chimbise	Agricultural Resources Board
Mr L. Dikobe	United Nations Development Programme
Mr H. Hester	BirdLife Botswana
Mr R. Kwerepe	Department of Crop Production
Mr D. Lecholo	Botswana Community Based Organisation Network
Ms. D. Malepa	National Conservation Strategy Coordinating Agency
Dr. M. Manthe-Tsuaneng	Department of Agricultural Research
Mr E. Mitchell	United Nations Development Programme
Mr T. Mmopelwa	Department of Wildlife and National Parks - Fisheries
Ms R. Mojaphoko	United National Development Programme
Mr F. Mosothwane	Department of Water Affairs
Ms L. Motoma	Forestry Association of Botswana
Mr D. Mughogho	Department of Wildlife and National Parks
Mr P. Mutakela	Forestry Division
Mr H. Okuda	United Nations Development Programme
Dr B. Raseroka	Department of Biological Sciences, University of Botswana
Mr D. Thamage	Veldproducts Research and Development

National Biodiversity Authority

Mr S. Baruti	Rural Development. Coordinating. Division, Ministry of Finance an Development Planning
Ms S. George	Department of Lands
Mr B. Gopolang	Department of Meteorological Services

National Biodiversity Authority

Ms D. Malepa	National Conservation Strategy Coordinating Agency
Dr M. Manthe-Tsuaneng	Department of Agricultural Research, Ministry of Agriculture
Mr C. Matale	Air Pollution Control Division
Mr F. Monggae	Kalahari Conservation Society
Mr N. Mosesane	Natural History Division, National Museum and Art Gallery
Mr F. Mosothwane	Department of Water Affairs
Mr D. Mughogho	Department of Wildlife and National Parks
Mr E. Naane	Department of Sanitation and Waste Management
Mr E. Otsogile	National Conservation Strategy Coordinating Agency
Mr B. Podisi	Department of Agricultural Research, Ministry of Agriculture
Mr R. Sebego	Department of Environmental Science, University of Botswana
Ms P. Segomelo	National Conservation Strategy Coordinating Agency
Dr G Sekgororwane	Department of Biological Science, University of Botswana
Mr S. Tiroyakgosi	Attorney General's Chambers
Mr L. Tshukudu	National Conservation Strategy Coordinating Agency

A very special thank you goes to Dr Phoebe Barnard and Mr Jonathan Timberlake, who patiently reviewed the draft versions of the report, and contributed with much appreciated comments, corrections and suggestions.

EXECUTIVE SUMMARY

Biodiversity – *the variability within and among living organisms and the systems they inhabit* – is the foundation upon which human survival exists.

Botswana's ecosystems, species and genetic diversity represent a huge asset, of which we, the current generation are the custodians. The value of biodiversity, although not always easy to quantify in economic terms, cannot be under estimated. Local communities depend on biodiversity directly for their livelihoods. The nation depends on it as it forms the very basis for most of the country's tourism industry. Botswana's biodiversity is also of global importance, as some of the unique ecosystems and endemic species do not occur anywhere else in the world. Without these biological resources and linked knowledge, the future of Botswana and its people would be rather bleak.

Environmental change and evolution are natural phenomenon and ecosystems are not static, but the rate of biodiversity loss at a global level is today increasing at an unprecedented rate (WCMC, 2000). Environmental change can be a result of long-term natural processes, which we cannot control, or it can be caused by human actions, which can be prevented and mitigated. Human induced changes in biodiversity levels can have profound impacts on the functioning of ecosystems, and ultimately affect the ecosystems that we depend upon for livelihoods, economy and survival. Our understanding of ecosystems functioning is still fairly basic, and as we are not entirely sure of the long-term implications of species extinctions and changes in biodiversity levels, it is therefore wise to apply the precautionary principle (CBD&UNEP, 2003).

It is difficult to generalise or prioritise threats to biodiversity at a national level, as the threats and level of threats vary according to the type of organism and species but also by geographical location. It is however generally agreed that one of the main threat to Botswana's biodiversity is habitat destruction and reduction (MEWT, 2003, BSAP Stocktake). Habitat destruction and habitat degradation can be caused by a variety of factors ranging from direct destruction through construction of houses, roads and other infrastructure, to damage caused by pollution, unsustainable land and resource use, including unsustainable rangeland management (localised overgrazing and bush encroachment), over harvesting and excessive water abstraction.

The Strategy

As a signatory to the Convention on Biological Diversity (CBD), the Government of Botswana has committed itself and its citizens to actively ensure that its biodiversity resource is maintained for generations to come. The goal of this Biodiversity Strategy and Action Plan is therefore to contribute to the long-term health of Botswana's ecosystems and related species, and to encourage sustainable and wise use of resources through the provision of a framework of specific activities designed to improve the way biodiversity is perceived, utilised and conserved. The Strategy builds on and complements the National Conservation Strategy, and forms part of the Government's effort to achieve Vision 2016.

The Biodiversity Strategy has 11 strategic objectives, designed to reach the BSAP guiding vision:

A nation in balance with nature, with fair access to biological resources, where the benefits deriving from the use of these resources are shared equitably for the benefit and livelihoods of current and future generations, and where all citizens recognize and understand the importance of maintaining Botswana's biological heritage and related knowledge and their role in the conservation and sustainable use of Botswana's biodiversity

The Strategic objectives are:

1 Better understanding of biodiversity and ecological processes:
Sound planning and development rely on sound data. Our understanding of ecosystems functioning is currently fairly limited and more research, data collection and inventories are needed. In order to know if our actions and activities are sustainable and to calculate environmental costs and benefits and long-term effects of different land use options we need reliable biological base-line data and long-term monitoring of the status of our genetic resources. Reference collections and taxonomic research are essential tools in identifying organisms, species and varieties

2 Long-term conservation and management of Botswana's biological diversity and genetic resources
For successful long-term conservation of biological resources it is important to take a holistic approach. The latest directives from the CBD are to adopt more of an ecosystems approach, i.e. to conserve habitats, of which species are the components.

With limited resources conservation activities need to be prioritised, and activities to do so form an important part of the BSAP. Development of district level biodiversity strategies to guide district planning and actions is a key component of the national strategy.

Conservation of Botswana's endemic species is especially important. It is also vital to protect and conserve the knowledge and traditions, which are related to biodiversity use. The younger generations are quickly losing interest in traditional knowledge and practices, and it will only take a few generations for this knowledge, built up over generations, to disappear if we don't make an effort to preserve it.

3 Efficient and sustainable utilisation of all components of biodiversity in Botswana through appropriate land and resource use practices and management
Sustainable use of biological resources is the key to development. The nation's wealth is built on its natural resources. The current population of Botswana are custodians of this natural heritage, and it is the responsibility of this generation to make sure that we don't erode the capital we have been given, leaving our children and grand-children the same resources and opportunities that we were given.

Sustainable use of components of biodiversity requires a combination of legal, policy and economic incentives, a change in attitudes, i.e. a realisation of the value of biodiversity (See objective 6), education and providing people with sustainable livelihoods opportunities and options.

4 An institutional environment, including human capacity, conducive to effective biodiversity conservation, sustainable use and management.
An institutional environment conducive to effective biodiversity conservation, sustainable use and management refers to an institutional climate and set-up which includes cross sectoral coordination, political will, appropriate economic incentives, adequate institutional structures and capacity, and a legal system to support and encourage conservation and sustainable use and management of Botswana's biological resources

5 Coping with environmental change and threats to biodiversity
Prevention is usually a much better and cheaper solution than cure. Addressing threats to biodiversity before they happen will therefore be cost effective in the long-term.

Of all the threats, climatic change poses the greatest challenge as its effects are still not sufficiently known and as it cannot be addressed directly. Rangeland degradation and hydrological change provide more direct and tangible threats to biodiversity, although also affected by climate change to some extent. We have the means and technologies to reduce the effects of these threats, and the main challenge is to find solutions, which are biologically, politically and economically acceptable.

6 Appropriate valuation/appreciation of biological diversity, and raised public awareness on the role of biodiversity in sustainable development and public participation in biodiversity related activities and decision making

This is an extremely important objective as the way we think of and value biodiversity form the foundation on which to build sustainable use and management of this natural resource. There is still a major need to raise general awareness levels of the value of Botswana's biodiversity capital to society and the ecological services it provides from primary school to government decision making.

Public participation in decision-making involving the use of biodiversity will encourage public support and participation and is vital to achieve sustainable solutions, be it for land use, or use of components of biodiversity

7 Fair access to biological resources and equitable sharing of benefits arising from the use of biological resources

Fair access to biological resources and equitable sharing of benefits deriving there from is one of the three key components of the CBD. There is an urgent need for Botswana to develop a specific Biodiversity Access and Benefit Sharing (ABS) strategy, which will address access to the actual resources as well as to related indigenous knowledge. The strategy should also identify means of encouraging fair benefit distribution. The ABS strategy would subsequently need to be supported by appropriate legislation, strengthened import and export regulations and enforcement in order to encourage use of biodiversity components and to discourage bio-piracy and un-equitable sharing of benefits.

The right to utilise components of biodiversity is often taken for granted, but with that right comes a responsibility to ensure that the resources are used sustainably and not wasted or depleted. One important concept of the Strategy is therefore to link the right to access to resources with the responsibility of sustainably using and monitoring of the same resource.

8 Safe industrial and technological development and other services based on national biodiversity resources for future prosperity

Botswana has so far applied the precautionary principle when dealing with biotechnology and Biosafety. New technologies based on genetic resources can however offer scope for economic diversification through research and development and participation in technical joint ventures.

There is a need for a structured approach to biotechnology and related Biosafety issues, which takes into consideration the requirements of the Cartagena Protocol on Biosafety to the Convention on Biological Diversity. The Ministry of Agriculture is already in the process of developing a national Biosafety framework and protocol, which links in with this strategy. There is also a need to raise public awareness about biotechnological opportunities and risks.

9 Improved availability and access to biodiversity data and information, and promotion of exchange of information

Information and data are essential components of responsible and informed decision making. There is a need facilitate the access and use of existing biodiversity data and to generate new data where there are gaps in our knowledge. The proposed model for streamlining the access to national biodiversity data include a computerised biodiversity Clearing House Mechanism (CHM) and the appointment of national focal-point institutions responsible for the recording, safe-keeping and maintaining records and data related to specific groups of organisms.

10 Recognition of Botswana's and the Southern African Region's roles with regards to Biodiversity

Botswana shares a lot of its natural resources with neighbouring countries and some of the identified eco-regions and eco-systems stretch across the national borders. Regional collaboration is therefore important for the long-term success of conservation programmes. Regional collaboration, cooperation and consistency are also important when setting standards and developing legal and policy frameworks, and to increase markets and for sharing resources, and thus reduce costs. To efficiently conserve biodiversity in the region it is important that access regulations (to wild medicinal plants for example) and management standards (including Biosafety and management of Invasive Alien Species) are harmonised,

and Botswana needs to ensure that biodiversity related legislation and practices are not trailing behind those of the other countries in the region.

11 Implementation of this Biodiversity Strategy and Action Plan

It is important for the future health of Botswana's biodiversity that the Biodiversity Strategy and Action Plan is implemented together with the existing National Conservation Strategy without delay. A critical prerequisite for successful implementation is to achieve political and high-level support and will to implement the strategy. This will help to drive the process. Public support and acceptance are also of key importance.

In addition, efficient coordination is a key requirement. It is proposed that a BSAP implementation office be established within the Ministry of Environment, Wildlife and Tourism, with the specific task of coordinating, monitoring and evaluating Biodiversity Strategy and Action Plan activities. To achieve full effect, the Strategy also needs to form an integral part of the national planning process and through appropriate interventions at the national level filter down to the users of biodiversity.

The BSAP process and the way forward

This Biodiversity Strategy and Action Plan is the end product of an 18 month long process and has involved the participation of a great number of people from around the country. The process has included a biodiversity stocktaking phase, covering a basic evaluation of biological resources, and related social, legal and policy and Biosafety issues, as well as options for a biodiversity Clearing House Mechanism (CHM).

Implementation of the Strategy requires commitment and active engagement by all stakeholders. The best way to ensure active participation in this respect is to equip people with an awareness and understanding of the importance of maintaining biodiversity, and why it is crucial that biodiversity components are used sustainably. Awareness raising and implementation activities have therefore been incorporated as important parts of the strategy and action plan.

Implementation of the Strategy and Action Plan has been build into the Strategy under strategic objective 11. The Ministry of Environment, Wildlife and Tourism will play a major role in Coordinating, monitoring and evaluating implementation of the Strategy and Action Plan

Timeframe and budget

The implementation timeframe of the BSAP is 5 years in general. A few activities however have a 10-year timeframe. Initially the BSAP was intended to coincide with NDP 9, i.e. to run from 2003/04 to 2008/2009. Due to various delays, the starting date for implementation of the strategy and action plan has slipped, and it is now likely that implementation of the BSAP will overlap with NDP 10. This is in fact an advantage as it means that the BSAP can be used directly to ensure that activities are incorporated in the next national development-planning phase.
Most activities can fit in under National Development Plan 9 (NDP9).

NDP9, makes good provision for environmental activities and most of the activities listed in the action plan can be linked to provisions under NDP9, and thus funding sources for government implemented activities. Funding for NGO and civil society implemented projects is however more difficult as there is currently little donor funding available for biodiversity projects.

Final words

Biodiversity is a subject that cuts across sectors and activities. There are no easy solutions to ensure successful biodiversity conservation and sustainable use, and Strategy activities therefore span over a wide variety of sectors, from policy and legal frameworks at national level to practical solutions on the ground, and over national and district borders and institutions. The Biodiversity Strategy and Action Plan is therefore by virtue a long document, which, to get the full picture, should be read in its entirety. However, to ensure implementation, the strategy will be broken down into manageable units by sector. If

all sectors implement their part we should by 2009 have taken a big step towards long-term conservation and sustainable use of Botswana's biodiversity.

1 INTRODUCTION

1.1 Botswana and its biological heritage

Botswana is a country of extremes with regards to biodiversity. With ecosystems varying from some of the driest and most biologically hostile areas in the Kalahari Desert and the Makgadikgadi salt pans to the lushest of the Okavango Delta, the variety of habitats and species is immense, each providing its own important and spectacular characteristics. These ecosystems represent a huge asset, both to the local communities as well as nationally, forming the very basis for much of the tourism industry in Botswana. Botswana's biodiversity is also valuable to the global community providing specific ecosystems, some of which are home to species not found anywhere else in the world.

Biodiversity needs to be properly managed in order to maintain genes, species and productive ecosystems. Unfortunately, there are no easy solutions to biodiversity management as biodiversity includes a wide variety of organisms, which are affected by a variety of factors in different ways, and sustainable use of all components of biodiversity therefore requires a combination of measures and activities.

Botswana is fortunate in being one of the few countries with much of its biodiversity still fairly intact. If we are complacent, this situation will however change and now is the time to "put the house in order" to ensure that these important biodiversity resources will be around for future generations to enjoy and benefit from. There are many areas relating to the sustainable use and conservation of biodiversity, in need of urgent attention, as identified through the Biodiversity Stocktake Report (MEWT: 2003). Climate change is today a reality, which in the long-term will affect all biodiversity components, not just in Botswana, but around the world. While it is difficult to stop climate change, we can help prevent the effects of climate change by, for example, putting mitigation measures and *ex situ* conservation structures in place to limit the negative effects. Habitat destruction from construction or mismanagement is another important area, which must be addressed to avoid unnecessary biodiversity loss. This includes rangeland degradation, which has already been identified by the National Conservation Strategy as an area of major concern to the country. The list of potential threats is much longer (A summary of threats to biodiversity in Botswana is found in Annex 1.).

While the effects of these threats may vary, what they have in common is that they threaten biodiversity levels and that a reduction of the levels of threat will require a number of measures, spanning across sectors, ministries and individuals. Botswana needs to strengthen its policy, legal and institutional framework with regards to biodiversity. A better understanding of biodiversity and ecological processes, together with baseline data is the necessary starting point on which to base management and policy decisions. The issue of access and benefits arising from biodiversity components is of key importance when promoting sustainable use, while availability of funding to carry out conservation, research and maintenance of information and collections is essential for driving activities. All the above will contribute to a framework guiding biodiversity management.

To achieve long-term sustainable management and use of biodiversity the most important factor however is to improve awareness and understanding of the importance and value of maintaining biodiversity, and the will to do so among Batswana.

Summary of areas needing action to prevent loss of biodiversity[1]

- **Policy, legal and institutional framework** protecting biodiversity and related knowledge
- **Awareness and understanding** of biodiversity, ecological processes and environmental economics
- **Data collection and management framework** (Baseline information, reference collections and long-term monitoring) to measure sustainability
- **Research and management framework** to comprehensively conserve ecosystems, species, genes and indigenous knowledge
- **Environmental assessment and enforcement procedures** to limit physical threat to biodiversity
- Issues surrounding resource **access and benefit sharing**
- **Availability of government and non-government funding** for biodiversity conservation

[I] for details of threats to biodiversity see Annex 1

1.2 The Nation's commitment to conserve biological diversity

Botswana is a signatory to the Convention on Biological Diversity (CBD). The objectives of the Convention are conservation of biological diversity, sustainable utilisation of components of biodiversity and equitable sharing of benefits arising from such utilisation.

By signing and ratifying the convention, Botswana has shown firm commitment to its environment, habitats and biodiversity, and has undertaken to develop and adapt national strategies, plans or programmes for the conservation and sustainable use of biological diversity and to achieve specific biodiversity conservation targets.

1.3 Goal of the Strategy

The goal of the Biodiversity Strategy and Action Plan is to contribute to the long-term health of Botswana's ecosystems and related species, and to encourage sustainable and wise use of resources through the provision of a framework of specific activities designed to improve the way biodiversity is perceived, utilised and conserved. The future of Botswana and its people is rather bleak without its biodiversity, natural resources, cultural traditions and related knowledge. This strategy is therefore an essential component in making sure that this national heritage and resource base is maintained.

The Strategy should form an integral part of the national planning process and, through appropriate interventions at the national level, filter down to the users of biodiversity. While the Strategy is relevant to all citizens it will directly affect those in charge of planning, biological research, conservation, users of components of biodiversity and enforcement authorities who apply the rules and regulations related to biodiversity.

Raising biodiversity awareness and appreciation of the true value of biodiversity are key components of the strategy, as these are crucial for the long-term conservation and sustainable use of Botswana's biodiversity.

2 MAINTAINING BIODIVERSITY FOR FUTURE GENERATIONS

2.1 Biodiversity – what is it and why is it important?

Biodiversity – *the variability within and among living organisms and the systems they inhabit* – is the foundation upon which human survival exists. In addition to its intrinsic value and contribution to sound ecosystem functioning, biodiversity provides goods and services essential for life on Earth, such as the provision of fresh water, soil conservation and climate stability, food, medicines and material for industry, and thus underpin sustainable development in many important ways and contributing to poverty alleviation. Finally biodiversity is at the heart of many of our values across different cultures and religions.

Biodiversity

"The variability among living organisms, including terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this include diversity within species (genetic), between species and of ecosystems"

CBD, 1992

The maintenance of biodiversity is therefore a necessary condition for sustainable development. It is a process, which requires awareness and active participation by all citizens. The challenge for Botswana is therefore to become a nation where each citizen has a basic understanding of the value of biodiversity and thus is pro-active in ensuring the conservation of genes, species, communities, and ecosystems on a variety of scales, so as to make sure that environmental goods and services are provided in a sustainable manner and not compromised for future generations. Making people aware of the importance of biodiversity and ecosystems functioning is a big step towards wiser use and thus sustainability.

2.2 Biodiversity in Botswana

Botswana is rich in faunal and agrobiodiversity species, while the flora, in terms of numbers of known species, is quite low in comparison with other countries in the region. The number of known species per group of organisms is summarized in Table 1, together with the number of endemic species and Red Data (RD), or rare and endangered, species in Botswana.

The purpose of the map in Figure 1 is to give an indication of species rich areas in Botswana, but it is not to be used as the basis for prioritization of conservation efforts, as this will be done at a much finer scale at District level taking district ecosystems and priorities into consideration. The map has been compiled, through combining available spatial data for wildlife and flora, but also taking into account biodiversity important habitat areas such as wetlands, pans, and kopjies. Additional survey work is required to refine the map. and Agrobiodiversity, micro-organisms and insects are not included in this analysis, as there is limited spatial data. Agrobiodiversity would however normally be low in areas of high natural biodiversity, reflecting landuse rather than ecological conditions. Limited or lack of relevant spatial data is not a condition specific to Botswana and many countries around the world have based their biodiversity priority areas largely on vertebrates and woody plants for that reason.

According to this basic analysis, areas which stand out as high (darker colour) in biodiversity are located along the northern border, the Okavango delta, the Makgadikgadi Pans, the northern Kalahari, the northeast and the southeast borders. The small triangles indicate locally important areas such as pans. . The biodiversity species richness index combines coverages from the fauna and flora assessments of species richness on an equal ranking i.e. same maximum values (BSAP appendix 2 and 3, 2003). The plant biodiversity species richness coverage was generated from National Botanical Institute in Pretoria historical herbarium distribution data combined with landforms and habitats known for high plant diversity, such as wetland areas including rivers, pans and dams, and hills and rocky outcrops

It is important to note that there might be a slight bias towards areas where collection and survey have taken place, although the inclusion of important biodiversity habitats will compensate for some of that.

Table 1: Summary of species inventory

Organism	No Species	Endemic	RD species
Mammals	150	3	112
Birds	570	1[1] (near endemic)	15[1]
Fish	82	1?[2]	0
Reptiles	131	Not known	2
Insects	Not known	Not known	NA
Other invertebrates	Not known	Not known	NA
Vascular Plants	Est. 2,150-3,000	15	43[3]
Fungi	Not known	Not known	NA
Micro-organisms	Not known	Not known	NA
Main livestock species	10	Not known	NA
Common crop species	28	Centre of endemism for *Cucurbitaceae* family and *Vigna* species	NA

Source: BSAP Stocktake Report. 2004

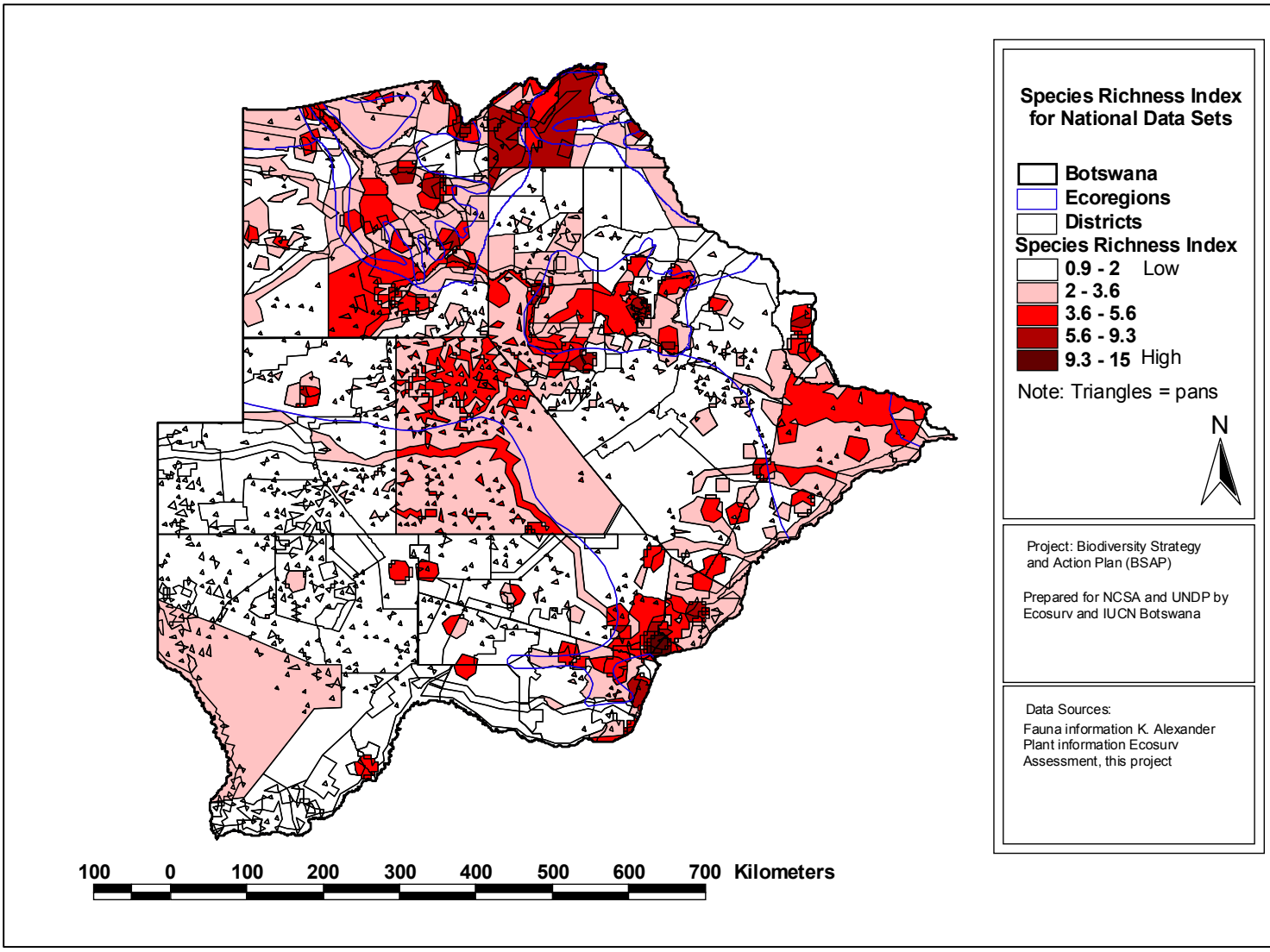
[1] Preliminary figure. Red Data List for birds is still being compiled

[2] One Aplocheilichthys species found in the Okavango Delta has not yet been named and could be endemic to Botswana.

[3] According to Golding ed. 2002. Many of the listed plants are data deficient and a recent review by RBG Kew suggests that the actual number is somewhat lower.

Figure 1: Botswana Species richness index for national datasets

(according to available national datasets)



There has been a lot of scientific debate about the relationship between the number of species in an ecosystem and ecosystems functioning. Consensus is however emerging among researchers that history, geography and local climate are primary factors governing ecosystem performance. Changes to biodiversity – such as the loss of dominant or "keystone" species, the loss or addition of complementary species, or the addition of invasive species – can affect how an ecosystem works, and while some of these impacts can be predicted, others cannot. Disruption to an ecosystem can often be reduced by maintaining biodiversity as closely as possible to its historical levels (Naeem, 2004).

In the absences of data measuring functional diversity, species richness can serve as a proxy measure. Figure 1 should therefore be seen as a general guide to biodiversity richness at a national level. It is however, still very important to further evaluate biodiversity and ecosystems functioning at local and District levels to set conservation priorities.

Botswana share a lot of its natural resources with neighbouring countries and some of the identified eco-regions stretch across the national borders. Regional collaboration and standards are therefore important for the long-term success of conservation programmes.

2.3 Biodiversity and livelihoods

2.3.1 *Major uses of biodiversity*

In Botswana, biodiversity contributes to livelihoods in several ways, through generation of cash and in-kind income from products derived from biological resources, and directly through provision of food, building materials, medicines etc. Although recent national surveys indicate a reduction in income contribution from biodiversity to rural livelihoods, the BSAP fieldwork found that in some parts of the country, biological resources remain central to subsistence livelihoods, and provide communities with opportunities to derive further benefits. Biodiversity is particularly central to the livelihoods of the rural communities in Kgalagadi, Chobe, Ngamiland and Ghanzi Districts, in providing raw materials and food sources, but it still plays an important part in the lives of most Batswana, providing fuelwood, herbal remedies, food, shade, clean water etc.

Income from CBNRM in 2002

Area	%	Million Pula
Subsistence use of natural resources	50	12.4
Trophy hunting	28	7.0
Photographic tourism and accommodation	12	2.9
Marketed veld products	5	1.2
Game meat	3	0.8
Craft production	2	0.5
Total	100	24.8

Rozemeijer, 2003

Biodiversity use varies according to season and often corresponds with times of good rains. Poorer groups, mostly widows, the elderly and orphans *generally* have a higher dependency rate on wild biological resources, or veld products, for their livelihood. Wild biological resources are also an important source of livelihood for certain ethnic groups, such as the San communities. Veld products are mainly used to meet household needs (building poles, thatching grass, firewood), for consumption, for medicinal purposes, and to a lesser extent for income generation. The knowledge and use of plants for medicinal purposes is widespread.

Biodiversity provides business opportunities. In 2002, Community Based Organisations (CBOs) generated P8,450,,000 through biodiversity based Joint Venture Agreements with the private sector. The biodiversity related economic activities in the Chobe and Ngamiland District are relatively better developed than in other parts of the country (CBNRM Status Report, 2003).

2.3.2 *Cultural practices and norms*

There is sufficient evidence that many traditional/local practices are relevant for biodiversity conservation. Myths, sacred chants, stories and proverbs, rites, cultural taboos and religious beliefs reflect a genuine concern for the environment and contribute indirectly to biodiversity conservation (Prescott, et. al. 2000). With rapid development and urbanisation of Botswana, the younger generations are showing less interest in traditional knowledge and skills, and there is widespread concern that these practices are slowly disappearing. This would be a tragedy for Botswana, as knowledge and experiences, assembled over

centuries, would then be lost forever, limiting our culture, traditions and options. This, in turn, would also have implications on the use and conservation of biodiversity.

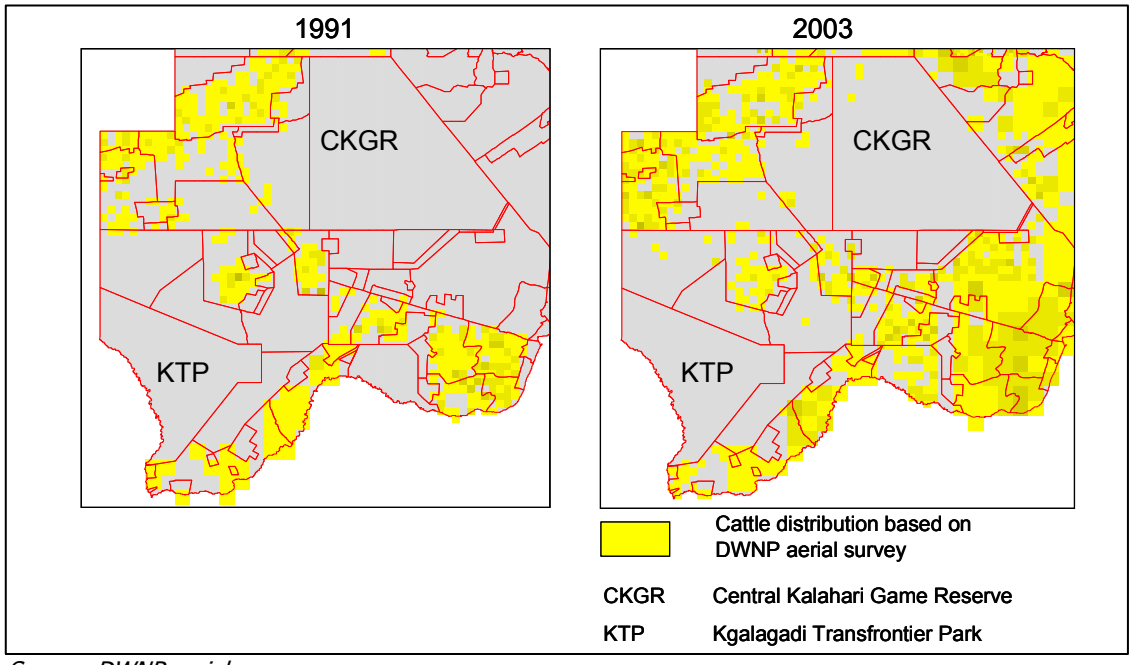
2.4 Access to biodiversity

Land tenure in Botswana	
Tribal or customary land	70%
State land	25%
Freehold	5%
	Source: NDP9

Allocation of suitable land is a major issue in Botswana, and although the total land area is large at 581,730 km^2, and the average population relatively small (3 persons per km^2 (NDP 9), there is strong competition for land suitable for agriculture and developments. Figure 2 shows the increase in cattle distribution, i.e. agricultural landuse, in southern and western Botswana between 1991 and 2003. The maps are based on data from Department of Wildlife and National Parks' aerial surveys. Despite the long-term ecological and economical consequences and costs, initiatives aimed at maintaining biodiversity and sustainable land management are not always given priority and short-term economic solutions tend to win. There is therefore a need to strengthen the mechanisms for maintaining and actively conserving important biodiversity areas.

Closely related to the issue of access to biodiversity, is the issue of fencing. The fencing of communal land through the Agricultural Policy of 1991 and the Tribal Grazing Land Policy is a major issue of concern among many Batswana, as it prevents access to areas which were previously open to the communities. Veterinary fences also have a major impact on wildlife access to surface water in some areas.

Figure 2: Cattle distribution in 1991 and 2003



Source: DWNP aerial surveys

According to Botswana law, the ownership and control of biodiversity belongs to the State, except on private, or *freehold land,* and *customary land (tribal land*). However, wildlife moving across freehold land or customary land still belongs to the State and hunting or killing wildlife requires permission or a license from the Department of Wildlife and National Parks.

While the tribal land areas are administered by local authorities (Land Boards), landholders have the exclusive right of use, but not ownership of the biodiversity resources on the land, except in the case of communal grazing, where the resources belong to the whole community. Land under the control of a local authority can in specific cases be given or acquired by the State, and the biodiversity resources situated in

them would then be transferred to the State, examples include Moremi Game Reserve, and the mining areas around Orapa and Jwaneng.

State land includes towns and cities, which are covered under both the State Land Act and the Town and Planning Act. Access to biodiversity resources on *State Land*, be it for commercial or scientific purposes, is regulated through a licensing system, where the licences are granted by the responsible Ministry. On *Freehold Land*, as on all other land, the right of use is limited when it comes to protected species as these are subject to the general law of Botswana, which prohibits unlawful removal of resources from their natural habitat areas. Any use or removal therefore requires a permit from the responsible authority.

It is widely accepted that existing laws concerning legal rights to access and use of genetic resources are un-coordinated and fragmented, be it *in situ* or *ex situ*, and that an update and harmonisation of the legal framework is urgently needed to bring it into line with current biodiversity sustainable use demands.

A complicating factor is that the line between commercial uses versus traditional use of natural resources has never been properly established, and there is a perception, rightly or wrongly, that the profits generated from Botswana's biological resources do not benefit the majority of Batswana currently. There is limited value-adding industry and initiatives and many communities feel the impact of low market prices for veldproducts and other raw materials. At the same time there is acknowledgement that there is a need to develop new markets and to improve utilisation, quality and marketing capacities in order to enhance benefits derived from biodiversity resources. The first step should therefore be to establish access and benefit sharing strategies, which must be linked with adequate legal and policy frameworks for protection of the resources as well as providing incentives for innovation and development. From a biodiversity conservation perspective there is a need to establish traditional use levels in order to distinguish between traditional and commercial use. An effective monitoring and licensing programme for species in which the commercial value may encourage over-exploitation is also essential. A few veldproduct species, such as Devil's claw (*Harpagophytum* spp.) and Kalahari truffle (*Terfezia pfeilii*) currently fall into this category.

2.5 Coping with environmental change

Environmental change and evolution is a natural phenomenon and ecosystems are not static. Environmental change can be a result of long-term natural processes, which we cannot control, or it can be caused by human actions, which can be prevented and mitigated. Some of the threats to Botswana's biodiversity, such as global warming and climate change are difficult to address at national level and require international engagement, while many others can be reduced or eliminated by positive action at national and local level.

Human induced changes in biodiversity levels can have profound impacts on the functioning of ecosystems, and ultimately affect the ecosystems that we depend upon for livelihoods, economy and survival. Our understanding of ecosystems functioning is still fairly basic, and as we are not entirely sure of the long term implications of species extinctions and changes in biodiversity levels, it is therefore wise to apply the precautionary principle (Convention on Biological Diversity, 2003), and try to reduce the level of threats as much as possible.

2.5.1 *Current levels of sustainability*

The rate of biodiversity loss at a global level is increasing at an unprecedented rate (WCMC, 2000). Compared to many other countries, Botswana is currently fortunate in that due to its large land area, low population density and the fairly high percentage of protected land, the level of threat to biodiversity to the country as a whole is still relatively low. However, unless a concerted effort is made to maintain this situation, national biodiversity levels are likely to slowly erode.

Rural populations often end up recipients of both the benefits and the costs of maintaining biodiversity. Despite traditional biodiversity management and conservation practices, current national biodiversity conservation activities sometimes clash with local community priorities. This is often a result of a lack of understanding or communication from both quarters.

The poverty-biodiversity loss cycle is mitigated in Botswana by government welfare policies and some limited non-natural resource management based economic opportunities, which reduce dependency on biodiversity resources. This situation which may not be permanent, may cause subsistence and poverty pressures on biodiversity to intensify in future

The long-term success of the strategy, therefore, depends on good communication between the resource users, managers, researchers and conservationists. It also requires community participation in decision-making around policy and action.

2.5.2 *Main threats to biodiversity in Botswana*

It is difficult to generalise or prioritise threats to biodiversity at a national level, as the threats and level of threats vary according to the type of organism and species but also by geographical location. It is however generally agreed that the main threat to Botswana's biodiversity is **habitat** destruction and reduction (MEWT, 2003, BSAP Stocktake). Habitat destruction and degradation can be caused by a variety of factors ranging from direct destruction through construction of houses, roads and other infrastructure, to damage caused by pollution, unsustainable land and resource use, including unsustainable rangeland management (localised overgrazing and bush encroachment), over harvesting and excessive water abstraction.

Loss of habitat

1,952 km of new roads and 6,872 km of bituminised roads were constructed during NDP8, the biggest road construction programme hitherto undertaken by Government. The trend is set to continue.

Source: NDP 9

Economic development is unfortunately often linked with an increase in construction of infrastructure and in consumption levels (water, cars, packaging, building sand etc), waste and **pollution** levels, and thus contributing to habitat destruction. With foresight and wise planning, many of the negative effects of development on biodiversity and unnecessary losses could be avoided or mitigated. Restoration and rehabilitation of habitats can be done, but are usually very expensive options. Solutions provided by the Strategy include improved landuse and biological resource planning and management, enhanced cross-sector collaborations, strengthening of the legal framework and capacity for enforcement and management of Environmental Impact Assessments, strengthening of environmental standards, improved awareness and accountability levels.

Wildlife vs. livestock systems in Ngamiland

Ngamiland wildlife systems have higher economic (i.e. to society at large) returns than small or large-scale livestock production, although financial returns (i.e. to the investor) of small scale livestock production is higher or similar to wildlife utilisation systems. Without agricultural subsidies, wildlife utilisation would have a clear comparative advantage

Barnes et al, 2001

National statistics suggest that human population density *per se* is not a threat to biodiversity in Botswana, but that in some areas the activities related to increases in population pressure are. For example, excessive harvesting of fuelwood is starting to emerge in the eastern corridor of the country. In many parts of the Kalahari settlements and ranches compete with natural ecosystems for grazing and water, threatening certain species and ecological processes. Solutions to these problems include a strengthening of the protected area network, establishment of wildlife corridors, biodiversity issues adequately included in district landuse planning, availability of affordable alternative energy sources and establishment of fuelwood plantations, to mention a few.

Climate change is today a reality, but mitigation of its effects is complicated, as the changes are not yet clearly understood. However, global long-term predictions are that rainfall patterns will get more erratic and that dryland countries can expect to get drier and hotter (Pers com. DMS 2003). Botswana is already considered a dryland country, so this scenario will have serious long-term implications on the country's biodiversity, and may affect distribution of species and habitats, and influence livelihoods based on agriculture and rangelands. An increase in the frequency of droughts and floods will also seriously affect agrobiodiversity activities. Solutions to dealing with climate change include establishment of, early warning mechanisms, breeding of drought tolerant breeds and varieties, research into climate change trends and establishment of mitigation and conservation measures accordingly, such as for example long-term *ex situ* collections.

Water is a key commodity sustaining biodiversity. Water is already a scarce resource in many parts of Botswana and with climate changing, the need for wise **water management** is even more important. This does not only include reaching sustainable consumption levels, water accounts and hydrological monitoring, but also implementation of Environmental Impact Assessment mitigation activities, such as regular release of dam water, reducing water pollution levels and improving water conservation awareness levels.

There are many other potential and actual threats with various effects on biodiversity, such as invasive species, fire, over-harvesting etc. We still don't know the full effect of some of these threats and continued research and adaptive land management tools are therefore essential.

The root causes leading to biodiversity loss are often quoted as being related to poverty, inequality, economics and demographic change. Poverty results in forced overuse of resources, while the general increase in development levels often results in an influx of people into towns and villages adding pressure on fuelwood resources etc. and changes in attitudes towards traditional methods and knowledge. In the case of Botswana, one of the root causes affecting biodiversity is land allocation and associated landuse. The promotion of the cattle industry, with associated issues such as grazing rights and fencing continues to be an issue of contention, not only between the agricultural and environmental sectors, but between the communities and cattle owners as well (BSAP consultation process). An important part of the Strategy and Action Plan is therefore to improve cross sectoral planning and collaboration, to review and harmonize existing and new policies affecting the environment and biodiversity and to reduce perverse incentives which lead to loss of biodiversity. In this respect, the raising of biodiversity awareness levels in general and about the long-term economic value of biodiversity and ecological processes are of key importance.

Range degradation during the 1994/95 wet season

Category	Km^2	% of total land area
Potentially degraded areas - bare soil	28,592	4.9
Partial potentially degraded areas	35.159	6.1
Possible bush encroached areas	37,141	6.4

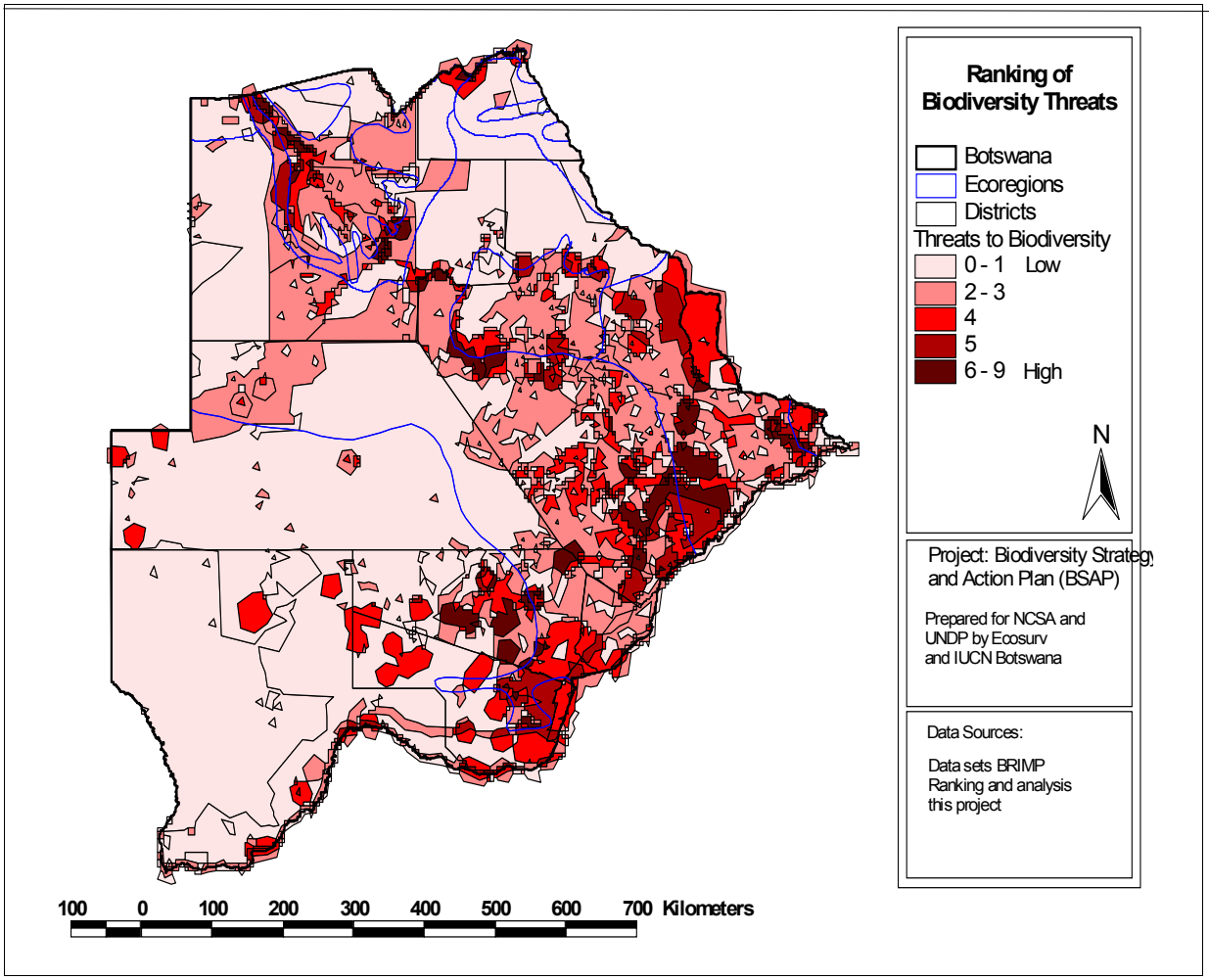
Further work is required to establish long-term trends and analysis at district level.
(Ringrose et al 1997)

Management of the biodiversity resources and related knowledge depend on the capacity and health of people, and in this respect the long-term effects of HIV/AIDS on the management of biological resources and knowledge cannot be understated. Continued training programmes and collection and recording of traditional crops, breeds and knowledge are therefore very important.

Figure 2 is derived from the biodiversity stocktake process and provides a quantitative overview of threats to biodiversity in Botswana, i.e. the number of threats to components of biodiversity by area. The analysis includes the following perceived threats: population and livestock pressure from settlements, livestock and tourism activities, hydrological change through water abstraction, areas prone to high numbers of wild fires and high elephant populations. While some activities, such as habitat destruction for example, have an overall negative effect on biodiversity; other perceived threats might have a substantially negative effect on certain species or components of biodiversity, but not necessarily on overall levels of biodiversity. Examples of such threats include fire, damage to vegetation by elephants and climate change, and further research is needed to establish their true effect on Botswana's biodiversity.

The map indicates that the highest pressures on overall biodiversity are in the eastern parts of the country and in and around the Okavango delta, with smaller pockets in other parts of the country. This is mainly a result of population pressure and hydrological changes.

Figure 2: Threats to biodiversity in Botswana



Source: BSAP Stocktake Report, 2004

The conclusion is that for successful and cost effective reduction and elimination of threats to biodiversity, inventories of threats and mitigation plans need to be brought down to the district level. Although some threats overarch all biodiversity components, reduction of threat and mitigation activities need to be driven by the relevant biodiversity component (flora, wildlife, birds, fish, insects, indigenous knowledge etc.) in collaboration with the relevant sectors to successfully reduce threats to biodiversity. At national level, these processes need to be supported through the provision of a conducive policy, legal and financial framework. The development of District Biodiversity Strategies and Action Plans are included in the national Strategy and Action Plan.

2.6 Conservation of resources

Maintaining the genetic diversity of a species is crucial for the long-term future of that specific species. Genetic diversity can be accomplished through maintaining large population levels, which can be achieved *in situ* if the habitats are large enough and the species levels high enough. Genetic diversity can also be maintained in *ex situ* storage. Ecosystems conservation is normally the preferred biodiversity conservation option, but it needs to be complimented by genetic and species conservation schemes. Species can often serve as indicators of the health of the whole system.

De*finition of a protected area*. The definition adopted is derived from that of the workshop on Categories of Protected Areas held at the IVth World Congress on National Parks and Protected Areas:

> *An area of land and/or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means*.

According to this definition, 45 % of Botswana's land area is protected (Pers com DWNP, 2004). The different types of protected areas are listed in Table 2:

Table 2: Types of Protected Areas in Botswana

Type of area	Km^2	% of tota	Legal constitution	Level of prot
National Parks			Wildlife Conservation and National I No 28 0f 1992	Ib No hunting
Game Reserves			Wildlife Conservation and National I No 28 0f 1992	Ib No hunting
Private Wildlife & Natur			No act deals with this	IV No hunting
Wildlife Management A (WMA). Gazetted.			Wildlife Conservation and National I No 28 0f 1992	V Controlled hur
Wildlife Management A (WMA). Ungazetted.				
Forest Reserves			Forest Act, 1968	II -Protection
National Monuments			Monuments and Relics Act 1970	III – Botanica monuments

a: According to IUCN guidelines on protected areas
Ia Strict Nature Reserve: protected area managed mainly for science
Ib Wilderness Area: protected area managed mainly for wilderness protection
II Ecosystem conservation and recreation (i.e. National Park)
III Conservation of natural features (i.e. Natural Monument)
IV Conservation through active management (i.e. Habitat/Species Management Area
V Landscape/seascape conservation and recreation (i.e. Protected Landscape/Seascape)
VI Sustainable use of natural ecosystems (i.e. Managed Resource Protected Area)

This protected area network provides good *in situ* protection for most of the eco-regions and many wildlife species, except in the north-eastern part of Botswana. While the vegetation in national parks and

game reserves is protected and the Forest Reserves offer protection of certain tree species, the protected area network offer less protection for Botswana's rare and endangered plants as most of these occur outside the protected area network (Balding, 2003).

Specific species management plans exist for certain groups of organisms, especially some of the bigger mammals and birds (Crocodile, ostrich and elephant).

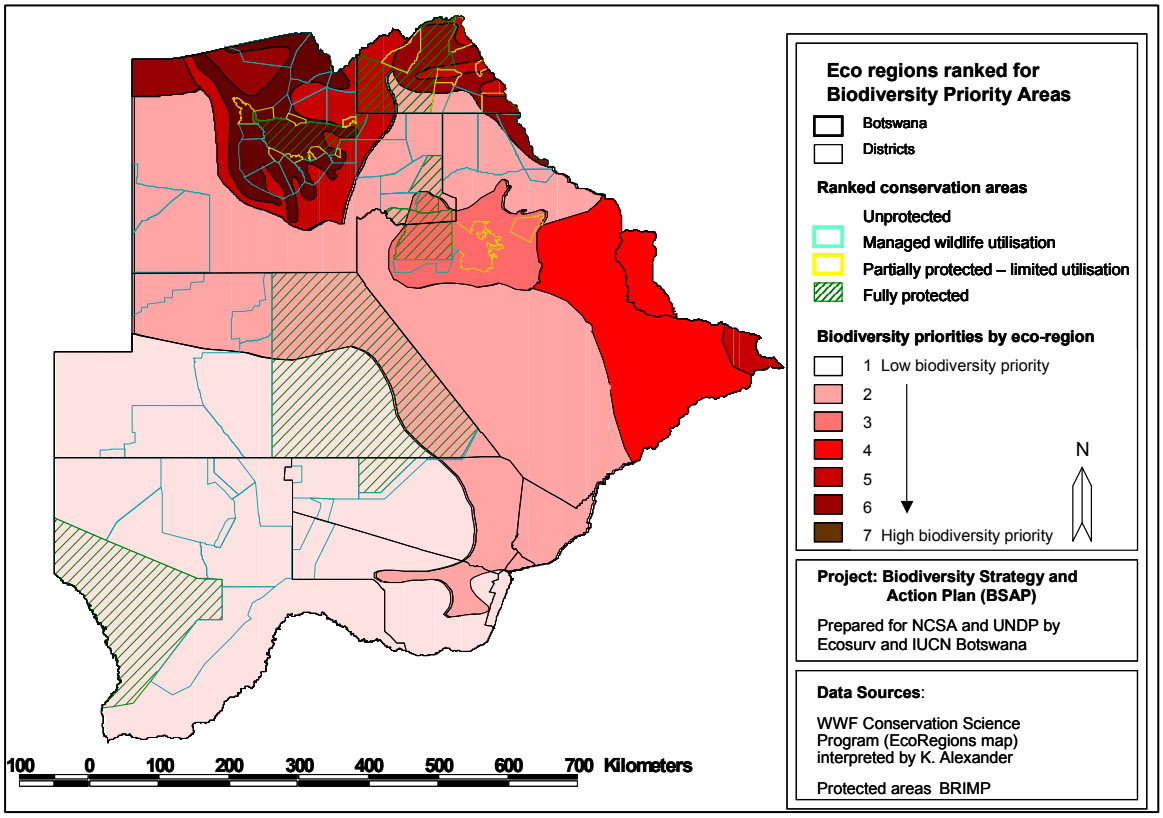
Ex situ conservation facilities and programmes are in place for crops and wild crop relatives. The National Plant Genetic Resources Centre holds seed collections of most of the major crops. These collections are duplicated at the regional Plant Genetic Resources Centre in Zambia. It is mainly the main crops that are being stored, although lately there has been an attempt to collect minor crops and wild crop relatives as well, but the collecting programme is still not comprehensive.

There are few *ex situ* conservation facilities for wildlife and conservation at genetic level is poor for all organisms. The genetic diversity is not known for most organisms, including animals.

Indigenous knowledge
The general knowledge about plants and their properties is still fairly broad, especially in the rural areas. With development has followed urbanisation and a general lack of interest in traditional methods and knowledge among the younger generations. This poses a great threat to indigenous knowledge, as it will only take a few generations for this type of knowledge to disappear completely.

Figure 3 shows conservation priority areas, based on analysis of species richness, levels of threats and current protection, together with an outline of existing protected areas.

Figure 3: Eco-regions ranked according to biodiversity and threats



Source: BSAP Stocktake report.

2.7 Institutional capacity

There is no government institution with overall responsibility for biodiversity. Several Government ministries and institutions have a stake in biodiversity conservation and sustainable use, and it is not always clear who has the ultimate responsibility for certain organisms (See Table 2), as areas of responsibilities sometimes overlap. The recent (2002) creation of the Ministry of Environment, Wildlife and Tourism (MEWT) however, has brought the majority of departments involved with environmental management together under one umbrella, and with an assertive coordinating effort as proposed in the Strategy there is little need for any major institutional changes of responsibilities.

The National Conservation Strategy Coordinating Agency (NCSA), which was established as a result of the National Conservation Strategy, has so far proven to have limited legal authority to act as a government environmental watchdog. It is therefore important to re-establish the legal authority of the NCSA/environmental watchdog body and to develop and adopt an overarching environmental legislative framework, as discussed in Chapter 3, to support it.

Table 3: Government institutions directly responsible for use and protection of component of biodiversity

Government Ministry	Summary of Responsibilities
MINISTRY OF ENVIRONMENT, WILDLIFE AND TOURISM.	▪ Environmental Management Coordination ▪ Environmentally related research permits ▪ Veldproduct quotas ▪ Plant import and export licences ▪ CITES issues (plants) ▪ Agricultural Resources Act ▪ Forestry policy ▪ Forestry inventories ▪ Forestry conservation ▪ Forest reserves ▪ Collection and distribution of tree seeds ▪ Seed storage ▪ Propagation ▪ Conservation inside National Parks and game reserves ▪ CITES faunal species ▪ Protection of certain animal species throughout Botswana ▪ Wildlife Research ▪ Implementation of the NCS ▪ National Focal point for the CBD, UNCCD, Ramsar and Stockholm conventions ▪ Environment Imapact Assessment Bill ▪ Environmental Research ▪ Environmental Education ▪ GEF Focal Point
MINISTRY OF AGRICULTURE.	▪ National Gene Bank ▪ Long term storage of seed ▪ Agricultural research, including germination and propagation ▪ Micro-organisms ▪ Agricultural herbarium ▪ Biosafety framework ▪ Wild crop relatives ▪ Micro-organisms ▪ Indigenous livestock species ▪ Control of pathogenic micro-organisms ▪ Research

Government Ministry	Summary of Responsibilities
	▪ Identification of pests and weeds ▪ Mapping of resources (BRIMP) ▪ Veldproduct research (BRIMP) ▪ Rangeland ecology and botany and inventories
MINISTRY OF LABOUR AND HOME AFFAIRS	▪ National herbarium collection ▪ Propagation of wild plants ▪ *Ex situ* collections of wild plants ▪ Vertebrate and invertebrate collections ▪ *In situ* conservation of Natural History Monuments (Botanical Monuments)
UNIVERSITY OF BOTSWANA	▪ Plant research ▪ Herbaria ▪ Fungi, Algae and micro-organisms ▪ Rangeland research ▪ Wildlife Research
MINISTRY OF MINERALS, ENERGY AND WATER AFFAIRS.	▪ Aquatic weeds control ▪ Aquatic plant herbarium (proposed) ▪ Sustainable water abstraction
MINISTRY OF FINANCE AND DEVELOPMENT PLANNING.	▪ Control and monitoring of Import and export of genetic Resources
MINISTRY OF COMMUNICATIONS, SCIENCE AND TECHNOLOGY	▪ Research ▪ Science research permits

Source: BSAP Stocktake Report - Appendix 2

Table 4: Some environmental NGOs in Botswana, involved with conservation of biodiversity

Name of organisation	Area of expertise
Birdlife Botswana	▪ Bird counts ▪ Education ▪ Advocacy ▪ Bird related research
Caracal	▪ Wildlife conflict ▪ Natural resource management
CBNRM Forum and support programme	▪ Community based natural resource management
Conservation International (Botswana)	▪ Natural resource management
Forestry Association of Botswana	▪ Community forestry ▪ Indigenous trees
IUCN (Botswana)	▪ Natural resource management
Kalahari Conservation Society	▪ Natural resource conservation
Khama Rhino Sanctuary Trust	▪ Wildlife Conservation
Mokolodi Nature Reserve	▪ Nature Conservation
Permaculture Trust Botswana	▪ Agro biodiversity conservation ▪ Farming systems
Veld Products Research and Development	▪ Veldproducts research and marketing ▪ Natural resource management
Thusano lefatsheng	▪ Veldproducts research and marketing ▪ Natural resource management

Table 4 lists some NGOs involved with natural resource management and biodiversity conservation. This list is not exhaustive and more NGOs and CBOs involved in environmental conservation can be found in the Directory of Non Government Organisations and Community Based Organisations.

With biodiversity expertise and information divided between many different institutions there is a great need for general coordination of biodiversity efforts, a need for a holistic approach rather than sectoral planning and execution, to assign specific responsibilities and to strengthen biodiversity conservation facilities and human resources in general.

In addition to government agencies, Non Governmental Organisations have been, and are closely involved in environmental conservation and research activities, including community based biodiversity activities. From a biodiversity perspective it is important to bring the existing draft CBNRM policy in line with the BSAP, and to formalise it.

2.7.1 *Human capital*

With biodiversity awareness being crucial to the long-term sustainability of biodiversity, there is a major need to raise the general level of understanding of the importance of maintaining biodiversity, with campaigns from primary school to government decision making.

The main biodiversity expertise in the country is divided between University of Botswana (UB), Botswana College of Agriculture (BCA), and Government Departments and institutions involved with environmental and biodiversity issues ((See Table 2), environmental NGOs (See Table 3) and selected companies in the private sector. While University of Botswana is fairly strong in the environmental field there is still a great need to train students specifically in biodiversity conservation, and to increase biosystematics' expertise in the country. There has recently been a drain of competent people from the environmental NGOs due to funding problems and there is little funding available for the NGOs to attract new staff. Donor funding for environmental activities has decreased drastically in recent years and it is important that Government makes a decision very soon on how best to cover the void, as loss of expertise and resources related to biodiversity planning and management could have long lasting consequences.

Biotechnology refers to any technique that uses living organisms or compounds derived from living organisms to change or improve the quality of crops and food, drugs and health care products, vaccines, industrial chemicals and other substances. Botswana has very limited capacity to undertake so called modern gene manipulation techniques, but expertise exists in areas such as vaccine production, plant breeding and artificial insemination.

2.7.2 *Data management capacity available services*

Sound planning and development rely on sound data. Our understanding of ecosystems functioning is currently fairly limited and more research, data collection and inventories are needed.

Easily accessible and user-friendly biodiversity data is essential to help promote conservation and sustainable use. Accessibility of biodiversity data and data formats, i.e. records not computerized, are today a constraint in Botswana, which often leads to duplication of data collecting and at worst not including important biodiversity data in analysis.

It is important to make key national databases and checklists easily available, while at the same time protect sensitive information, such as distribution data for rare and endangered species. It is also essential to ensure that information materials and data aimed at users at community level should be made available in Setswana.

2.7.3 *Status of biodiversity technology development and use*

Biotechnology is applying biological systems and organisms to scientific, agricultural and environmental processes or a technological application that uses biological systems, living organisms or their derivatives to make or modify products, such as GMO foodstuffs. Biosafety are measures (policy, legislative, administrative and enforcement) that are set in place to address safety for the environment and human health in relation to modern biotechnology.

Biotechnology is still a very minor sector in Botswana, although some of the activities currently taking place are of great importance, such as vaccine production, artificial insemination and plant breeding. There is currently limited modern biotechnology activity in Botswana, i.e. use of new recombinant nucleic acid or cell fusion techniques. As of 2004 Botswana has not knowingly allowed genetically modified crop use or field trials.

Although fairly untapped and unexplored, Botswana is likely to have genetic resources with potential value for the biotechnology industry. For example, the saltpans harbour some very specialised organisms which have developed salt and drought tolerance over the years. Botswana is also a genetic centre for the cucurbit family (melons and cucumbers) and for vigna species (cowpeas), and harbour a potentially valuable gene pool. The setting up of biotechnology-based enterprises, however, often requires major start-up investments in equipment and facilities. Few companies in Botswana have the capacity and capital to establish biotechnology-based production or to compete with the large international pharmaceutical companies. A better way forward would be to collaborate within the region and to set up biotechnology based joint ventures with international companies, provided that access and benefit-sharing arrangements have been made.

Any biotechnology-based activities require rigid safety measures as the consequences of accidents could have severe effects on people and the environment. Government, coordinated by the Ministry of Agriculture, is currently developing a Biosafety Framework to help guide decisions on biotechnology and Biosafety. Both biotechnology and Biosafety require human, financial and technological resources to implement. In particular, biotechnology requires financial resources to conduct research and develop the necessary technology.

3 BSAP DEVELOPMENT PROCESS

3.1 Strategy development process

This Biodiversity Strategy and Action Plan is the end product of an 18 month long process. This process has included a biodiversity stocktaking phase, covering a basic evaluation of biological resources, social, legal and policy issues related to biodiversity as well as Biosafety and Biotechnology, and options for a biodiversity Clearing House Mechanism (CHM). Out of the stocktaking exercise emerged a list of needs, gaps and opportunities (MEWT, 2004). These were subsequently turned into a long list of strategy statements, and used to develop the BSAP outline (BSAP Outline Report), 2004. The BSAP outline was then taken around the country for consultation through 7 workshops, addressing all 10 districts, held during a 3 month period in early 2004. Although these workshops were focused on seeking inputs into the development of the BSAP it was quickly realized that it was also necessary to provide an overview of the Convention on Biological Diversity (CBD), the BSAP Project and revisit some of the stocktaking issues to equip the participants with enough background to be able to prioritise the strategic objectives and targets and to provide input into the Action Plan. A summary of the workshop conclusions can be found in Annex 1.

Based on the consultation, the BSAP outline was streamlined into 11 main objectives, each made up of specific strategy targets and related action points and a draft strategy and action plan developed. The draft BSAP was presented and discussed at a National Workshop in July 2004. Comments from the national workshop were incorporated into a final draft, which was submitted for international review, before the process was completed. The result is the document you see in front of you.

3.2 Legal and policy framework and basic principles

Whilst the Convention on Biological Diversity (CBD) provides the inspiration and guiding principles for this Biodiversity Strategy and Action Plan, the Strategy is also guided by national environmental planning frameworks, and in particular by the overall long-term framework provided for the nation by Vision 2016.

The 2010 Biodiversity Target

"to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth."

CBD COP Decision VI/26

Vision 2016
Towards prosperity for all

This will be achieved through:

- An educated and informed Nation
- A Prosperous, Productive and Innovative Nation
- A Compassionate, Just and Caring Nation
- A Safe and Secure Nation
- An Open, Democratic and Accountable Nation
- A Moral and Tolerant Nation
- A United and Proud Nation

Other relevant planning documents, which have been considered while preparing the BSAP include:

- NDP9 Environmental keynote paper
- National Action Plan to Combat Drought and Desertification
- Environmental Planning Project (EPP)
- National Conservation Strategy (NCS)
- NCS Action Plan (1998)
- National Wetlands Policy (draft)

The NCS Action Plan is a very substantial document, which addresses policy, economic incentives, public awareness and legislative issues. It doesn't however directly address specific biodiversity issues, and the BSAP should therefore be seen as a complement to the NCS Action Plan. As the NCS Action Plan hasn't yet been fully implemented, some of the recommended activities with importance to biodiversity conservation and management are therefore repeated in the BSAP. To achieve maximum impact, the two strategies and action plans should ideally be implemented in tandem.

The format of the Biodiversity Strategy and Acton Plan for Botswana has been developed using the recommended international guidelines and methods (Miller *et al,* 1995, Prescott *et al*, 2000, Smith *et a*l, 2003), while at the same time taking national needs, concerns and conditions into consideration. National concerns have been provided through the stocktaking process and workshops at national and technical levels (MEWT, 2003).

In accordance with Convention on Biological Diversity (CBD) Decision V/6, the strategy is also attempting to respond to the call to apply, as appropriate, the ecosystem approach, i.e. to adopt a more holistic approach to conservation across sectoral boundaries.

Ecosystems approach

as defined by the Convention on Biological Diversity (CBD)

"a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way"

(CBD, 2003)

The twelve principles of the Ecosystems Approach are listed in Box 1. The ecosystem approach does not preclude other management and conservation approaches, such as species conservation programmes for example, but should be a tool to integrate all these approaches and other methodologies to deal with complex situation. This BSAP thus contains a mix of strategic aims and management approaches.

While these principles and the policy frameworks are important, the guidance for the detailed development of the strategy has been provided by the vision of where Botswana would like to be in the future with regards to biodiversity and associated guiding principles, which were developed during the First National BSAP workshop in October 2003.

Biodiversity Vision for Botswana

A nation in balance with nature, with fair access to biological resources, where the benefits deriving from the use of these resources are shared equitably for the benefit and livelihoods of current and future generations, and where all citizens recognize and understand the importance of maintaining Botswana's biological heritage and related knowledge and their role in the conservation and sustainable use of Botswana's biodiversity.

Source: BSAP 1st National Workshop

Guiding Principles[4]

- All life forms have intrinsic value
- People have an intrinsic right to use biodiversity resources for subsistence and for income generation, provided this is done in a sustainable and equitable manner and not causing harm to other life forms.
- Biodiversity and ecosystem services are essential to sustainable development. An ecological approach (Ref. Ecosystems approach, Box 1) to resource management is therefore central to achieving biodiversity conservation and the sustainable use of biological resources.
- We are not the owners but the stewards of our biological resources. All Batswana depend on biodiversity and have a responsibility to contribute to biodiversity conservation and to use biological resources sustainably.
- A strong Government framework is essential to support and guide conservation and sustainable use of biodiversity. While all levels of government have clear responsibility, the cooperation of conservation groups, resource users, indigenous peoples, and the community in general is critical to the conservation of biological diversity
- Biological diversity is best conserved in the wild (*in situ*). Central to the conservation of Botswana's biological diversity is the establishment of a comprehensive, representative and adequate system of ecologically viable protected areas integrated with the sympathetic management of all other areas, including agricultural and other resource production systems
- *Ex situ* conservation provides a complement to in situ conservation and thus serves as an insurance policy.
- Indigenous genetic resources and related knowledge, innovations and traditional practices should be respected, preserved, maintained, and used with the approval and involvement of those who possess this knowledge
- Processes for and decisions about the allocation and use of Botswana's resources should be efficient, equitable, transparent and objective
- Sound environmental and development planning is underpinned by good science and economics
- The Precautionary Principle should be applied and conservation of biodiversity should proceed on the basis of the best knowledge available and best practice experience, using approaches that can be refined as new knowledge is gained
- Prevention and preparedness is better than cure. Therefore, investment in sound ecosystem management and a systematic reduction of threats to biodiversity is much preferable and usually more economic than the difficult and inevitably incomplete restoration of damaged environments
- The conservation of Botswana's biological diversity is affected by regional and international activities and requires pro-active actions extending beyond national jurisdiction

[4] These guiding principles build on the experiences of a number of Biodiversity Strategy and Action Plans from a wide variety of countries from around the world. This approach was taken rather than starting from scratch with the development of the guiding principles due to the limited timeframe at the one day workshop.

Box 1: Principles of the Ecosystem approach

CBD Principles of the Ecosystems approach

Principle 1. The objectives of management of land, water and living resources are a matter of societal choice.

Principle 2. Management should be decentralized to the lowest appropriate level

Principle 3. Ecosystem managers should consider the effects (actual and potential) of their activities on adjacent and other ecosystems.

Principle 4. Recognising potential gains from management, there is usually a need to understand and manage the ecosystem in an economic context. Any such ecosystem –management programme should:

- Reduce those market distortions that adversely affect biological diversity;
- Align incentives to promote biodiversity conservation and sustainable use; and
- Internalise costs and benefits in the given ecosystem to the extent feasible.

Principle 5. Conservation of ecosystem structure and functioning, in order to maintain ecosystem services, should be a priority target of the ecosystem approach.

Principle 6. Ecosystems must be managed within the limits of their functioning.

Principle 7. The ecosystem approach should be undertaken at the appropriate spatial and temporal scales.

Principle 8. Recognizing the varying temporal scales and lag-effects that characterise ecosystem processes, objectives for ecosystem management should be set for the long term.

Principle 9. Management must recognise that change is inevitable.

Principle 10. Ecosystem approach should seek the appropriate balance between, and integration of, conservation and use of biological diversity.

Principle 11. The ecosystem approach should consider all forms of relevant information, including scientific, indigenous, and local knowledge, innovations and practices.

Principle 12. The ecosystem approach should involve all relevant sectors of society and scientific disciplines.

Source: CBD and UNEP; 2003

4 BOTSWANA BIODIVERSITY STRATEGY

4.1 Introduction to the Strategy

A strategy is a policy document, and it will only have a real impact if it is implemented, which requires commitment and active engagement by all stakeholders. In the case of biodiversity – we are all stakeholders in one form or other and successful implementation of the biodiversity strategy therefore requires that we all participate in its implementation. The best way to ensure active participation in this respect is to equip people with an awareness and understanding of the importance of maintaining biodiversity and why it is crucial that biodiversity components are used sustainably. Awareness raising and implementation activities have therefore been incorporated as important parts of the strategy and action plan.

The right to utilise components of biodiversity is often taken for granted, but with that right comes a responsibility to ensure that the resources are used sustainably and not wasted or depleted. This responsibility extends to all sectors, including government, the private sector and civil society. Today, many development and economic activities are often referred to as being sustainable, and might be so in the short term, but the long-term effects are not always clear. In the case of biodiversity and ecosystems it is therefore important to take a longer-term perspective and to recognise the needs of future generations of Batswana in current planning and implementation of activities.

The only way to know if our actions are truly sustainable is to establish a baseline of data and to undertake continued monitoring to see if levels are maintained and to detect any changes. So while this strategy is aimed at stimulating and encouraging the use of biodiversity resources for long-term social and economic benefits, it also addresses necessary actions to ensure that the resources are not wasted in the short term.

4.2 Strategy components

The Biodiversity Strategy and Action Plan has been divided into 11 strategic objectives, reflecting the long-term desired state of the nation. These are:

Strategic objectives

1. Better understanding of biodiversity and ecological processes
2. Long-term conservation and management of Botswana's biological diversity and genetic resources
3. Efficient and sustainable utilisation of all components of biodiversity in Botswana through appropriate land and resource use practices and management
4. An institutional environment, including human capacity, conducive to effective biodiversity conservation, sustainable use and management.
5. Coping with environmental change and threats to biodiversity
6. Appropriate valuation/appreciation of biological diversity, and raised public awareness on the role of biodiversity in sustainable development and public participation in biodiversity related activities and decision making
7. Fair access to biological resources and equitable sharing of benefits arising from the use of biological resources
8. Safe industrial and technological development and other services based on national biodiversity resources for future prosperity
9. Improved availability and access to biodiversity data and information, and promotion of exchange of information
10. Recognition of Botswana's and the Southern African Region's roles with regards to Biodiversity
11. Implementation of this Biodiversity Strategy and Action Plan

Each strategic objective has then been broken down into strategic targets, followed by detailed actions designed to effectively achieve these targets. This chapter outlines each main strategic objective and related strategic targets and actions. The strategic targets have been formulated as statements, describing the desired state and a brief justification is given as to why the strategic target is important. The action-points are described as actions. The Action Plan is presented in table format in Chapter 5.

The strategic objectives and targets have not been prioritised, but an attempt has been made to put them into a logical order. Some of the strategy components require a crosscutting mix of activities, and some repetition and duplication is therefore unavoidable. The important thing to bear in mind is that all the strategic objective, targets and actions complement and relate to each other, and the strategy elements and actions should therefore not been seen in isolation, but as part of a whole process - leading to the vision.

4.3 Strategy timeframe

The implementation timeframe of the BSAP is 5 years in general. A few activities however have a 10 year timeframe. Initially the BSAP was intended to coincide with NDP 9, i.e. to run from 2003/04 to 2008/2009. Due to various delays, the starting date for implementation of the strategy and action plan has slipped, and it is now likely that implementation of the BSAP will overlap with NDP 10. This is in fact an advantage as it means that the BSAP can be used directly to ensure that activities are incorporated in the next national development-planning phase.

The timeframe for each activity is indicated in the Action Plan in Chapter 5.

The BSAP should be coordinated by an agency within the government and it is envisaged that this coordinating role will be carried out by the NCSA until and if a Biodiversity Authority is established.

OBJECTIVE 1

BETTER UNDERSTANDING OF BIODIVERSITY AND ECOLOGICAL PROCESSES

WHY

Conservation and sustainable use of biodiversity are complex issues. In order to know if our actions and activities are sustainable, and to calculate environmental costs and benefits and long-term effects of different land use options, we need reliable biological base-line data and long-term monitoring of the status of our genetic resources. Reference collections and taxonomic research are essential tools in identifying organisms, species and varieties.

WHAT DOES NDP 9 SAY?

Paragraph 14.5 encourages research in fields such as biodiversity conservation, natural resources management, energy, environmental governance and planning, and resource economics. A National Strategic Plan for integrated environmental research will be assessed during NDP 9 and if found appropriate developed an implemented.

Paragraph 14.39 states that "The intrinsic and total economic value of most natural resources is not known and neither is the cost of environmental damage. Resource monitoring will be strengthened, and the results of trend analysis will be incorporated in policies, programmes and projects"

WHAT DOES NCS SAY

Paragraph 6.2.1 states that "Through the NCS it is intended that all important ecosystems, wildlife habitats, landscapes and cultural features should be surveyed in detail preceding the preparation of management plans.

Paragraph 2.1.2 emphasises the importance of access to reliable and up-to-date information about the quality of the country's natural resources as a basis for government decisions.

In addition, paragraph 4.8.11 calls on the establishment of a research and development strategy, specifically in support of the NCS goals.

Objective 1 - Strategic targets overview

1.1	National inventories of components of biodiversity (species and ecosystems) established
1.2	National biodiversity reference collections established for key groups
1.3	A focused biodiversity research programme aimed at establishing biodiversity trends, understanding ecological processes and finding suitable biodiversity management solutions
1.4	Better understanding of the effects of socio-economic issues on biodiversity, including demographic change and HIV/AIDS

Strategic targets details

1.1 National inventories of components of biodiversity (species and ecosystems) established

Justification
National inventories of flora and micro-organisms are currently not available and fauna inventories are incomplete. Inventories are essential to determine conservation status and should form the basis for biodiversity planning and setting of conservation priorities.

Vegetation maps and detailed descriptions of vegetation form the basis of biological conservation and management practices. With the exception of the deserts, vegetation is the most obvious and easily monitored manifestation of an ecosystem, as plants form the base of the trophic pyramid. In short, vegetation represents an integration of all the environmental factors that make up an ecosystem and constitutes a readily measurable indicator of the health and stability of that ecosystem.

Actions to achieve targets

1.1.1 Clarify and establish institutional responsibilities and focal organisations (wildlife, flora, birds, fish, insects, fungi etc) for collection and maintenance of national biodiversity data (Ref Objective 9 – Access to data), and establish mechanisms to facilitate and encourage deposit of biodiversity data collected by other data collectors and researchers at these focal organisations (Ref 9.4.2 – Depository for biodiversity research data).

1.1.2 Establish national data collection standards through peer reviewed process taking cognisance of international and regional standards, and disseminate to concerned institutions (Ref 9.1- Data standards)

1.1.3 Set up national survey programmes for under-surveyed biodiversity groups, with priority given to the rare and endangered and data deficient species, and implement programme (Ref 1.2.1 – target taxa for reference collections)

1.1.4 Include birds, fish, reptiles, amphibians and rare and endangered animal species in wildlife counts to monitor species levels and thus provide an indication of trends of biodiversity levels

1.1.5 Develop a detailed national vegetation map based on most effective technologies, including satellite information and make it easily available through the biodiversity CHM (Ref.9.3.2 - CHM)

1.1.6 With the vegetation map as a base, establish national criteria and guidelines for ecosystems classification and delineation through consultation and peer reviewed process

1.1.7 Classify and map ecosystems at district level according to established national classification criteria and standards.

1.1.8 Produce a national ecosystems map based on the district maps and make the map easily accessible through the biodiversity CHM (Ref 9.3 2– CHM)

Outputs/Products

- National focal institutions for hosting biodiversity data assigned
- Set of national data collection standards for each group of biodiversity organisms
- National survey baseline data and inventories for mammals, birds, fish, flora, reptiles, insects and fungi

- Mechanisms to link data providers with national biodiversity focal centres
- National vegetation map
- National criteria for ecosystems classification
- District ecosystems maps
- National ecosystems map
- Ecosystems map available to the public through CHM

1.2 National biodiversity reference collections established for key groups

Justification
National reference collections are currently not complete and collections are scattered between various institutions and not always satisfactorily curated. Reference collections are essential for identification purposes, and could in some cases be used for provenance testing, i.e. to determine the origins of a specific organism or sample. Due to limited manpower and expertise, it is suggested that collections focus on vertebrates and plants to start with. Regional and international collaborations should be considered for other groups, such as invertebrates and micro-organisms and insects, where national expertise and infrastructure is limited. (See Chapter 10 – Regional context)

Actions to achieve target

1.2.1 Identify and prioritise target taxa and areas according to established criteria for vertebrates and plants.
1.2.2 Appoint/Establish national centres of excellence with responsibility for collecting, housing and curating national *ex situ* and *in situ* collections and reference collections (link with data depository in 1.1.1)
1.2.3 Undertake large scale/multiple site collections of identified target taxa to strengthen national reference collections
1.2.4 Actively curate collections to maintain quality

Outputs/Products
- Target taxa priority list
- National focal centres for biodiversity collections established and equipped to carry out task
- National reference collections for key biodiversity groups established
- High quality collections for conservation and reference.

1.3 A focused biodiversity research programme aimed at establishing biodiversity trends, understanding ecological processes and finding suitable biodiversity management solutions.

Justification
Botswana has relatively good environmental and ecological research capacity, but research capacity is lacking in the fields of botany, microbiology and biosystematics. A focused biodiversity research programme will help ensure efficient use of funds and infrastructure and lead to improved understanding of biodiversity and ecological processes. Formal and informal links with research institutions outside of Botswana should be encouraged in those fields where there is limited national research capacity.

Long-term monitoring of biodiversity is necessary to establish trends in biological resources, to understand the ecological processes, and to determine the sustainability of any activity using components of biodiversity or in other ways affecting biodiversity. Consistent long-term monitoring of biodiversity and ecosystems requires easily measurable indicators and permanent monitoring sites.

Secure funding is a prerequisite for long-term ecological research and monitoring.

Actions to achieve target

1.3.1 Improve efficiency in allocating research permits and decentralise the monitoring of permits and collection of research results for better efficiency (Ref.- 9.4.1 – collection of research reports) Link permits with the requirement to use national data collection standards, (Ref 1.1.2 – data standards), to ensure compatible data and with legal and biosafety requirements for moving organisms (Ref 4.3.- legal framework)
1.3.2 Review the Research Act and update taking the recommendations from the BSAP into consideration.
1.3.3 Establish a biodiversity research fund
1.3.4 Establish biodiversity priority research topics for the fund, including under-represented taxa, species with genetic centres in Botswana, understanding of ecological processes and ecosystems management including carrying capacities, to guide allocation of funds.
1.3.5 Encourage cooperation and partnership development between Government, NGOs, communities, the private sector and regional and international institutions in biodiversity research through funding
1.3.6 Move towards setting of indicators for biodiversity and ecosystem functioning taking cognisance of regional and international standards, and establish carrying capacity levels for livestock and larger wildlife groups.
1.3.7 Based on the above indicators, design compatible national and district level monitoring systems of biodiversity and ecosystem function, and assign responsibility for monitoring, including user based monitoring where relevant
1.3.8 Develop training packages for user-based monitoring by communities and other biodiversity users
1.3.9 Analyse monitoring data at appropriate spatial and temporal scales, establish trends, and use to establish national conservation priorities.
1.3.10 Disseminate status and trends to planners, managers and decision makers through progress reports and link with the State Of the Environment reporting

Outputs/Products

- Compatible research data
- Updated Research Act
- Biodiversity research fund, priority research areas, and guidelines for disbursal of funds established.
- Increased number of private sector and NGO managed biodiversity programmes
- Private Sector and NGO representation in technical expert groups
- National Biodiversity indicators and land carrying capacity established
- Priority groups and taxa for conservation, including RDL species and endemics, identified
- National and District biodiversity monitoring systems in place
- Community and user based monitoring systems linked with district and national biodiversity monitoring systems
- Biodiversity monitoring training packages
- National biodiversity status and trends regularly included in State of the Environment Report.

1.4 Better understanding of the effects of socio-economic issues on biodiversity conservation

Justification

Socio-economic issues and biodiversity conservation are closely linked. Demographic change and urbanisation will affect resource use in an area, including water extraction and harvesting of fuelwood. Demographic changes and health issues, including HIV/AIDS, affect the workforce and in turn capacity to carry out biodiversity conservation and management activities. They also have implications on the preservation of indigenous knowledge and traditional methods.

In addition, the economic climate and poverty levels will influence the choice, or lack of choice, in terms of land use and land use practices. Understanding the relationship between people and biodiversity conservation is therefore essential for sustainable biodiversity management.

Activities to achieve targets

1.4.1 Evaluate the impact of HIV/AIDS on future biodiversity management and conservation

capacity

1.4.2 Evaluate the impact of demographic change on future biodiversity management, preservation of traditional methods, varieties and indigenous knowledge.

1.4.3 Analyse of the economic and cultural importance of livestock and veldproducts to individual Batswana to guide national planning and provision of livelihood alternatives.

Outputs/Products

- Policy briefs on the socio-economic long-term effects on biodiversity conservation for management planning purposes including a review on HIV/ AIDS
- Demographic projections by district and employment sector, and their effects on biodiversity and Indigenous Knowledge Systems (IKS)
- Policy briefs on the importance, to the individual and the nation, of the livestock and veldproduct sectors to guide macro economic and land use planning

OBJECTIVE 2

LONG-TERM CONSERVATION AND MANAGEMENT OF BOTSWANA'S BIOLOGICAL DIVERSITY

WHY

"The Government of Botswana is responsible for ensuring that its natural resources are harnessed for the benefit of future generations", according to the National Conservation Strategy. While this strategy recognises the immense value of Botswana's natural resource base, and the need for conserving it, pinpointing important components of biodiversity such as wildlife, wood, veld and rangeland resources, it does not however specifically address other groups of organisms, agro biodiversity or whole ecosystems. For successful long-term conservation of biological resources it is important to have a holistic view and the CBD is advocating for countries to adopt more of an ecosystems approach. In this respect, the BSAP adds and complements the NCS.

With limited resources conservation activities need to be prioritised, and activities to do so form an important part of the BSAP. Of special importance are the endemic species, as according to the Convention on Biological Diversity, Botswana is the custodian of these species with responsibility for their survival.

Very little is known about the genetic diversity of wild plants and animals. However, within the timeframe of the strategy and action plan there is not enough time or resources to address wildlife and wild plant genetic diversity and conservation efforts should focus on ecosystems and species conservation, aiming at making sure that populations and habitats are large enough for the survival of the species. Maintenance of genetic diversity is however an important part of the conservation of agrobiodiversity, and needs to be recorded and collected.There are already many successful conservation activities ongoing in Botswana. The strategic targets presented here have therefore been designed to complement and add to on-going conservation activities.

WHAT DOES NDP 9 SAY?

Environmental protection is one of the policy thrusts of NDP 9, as mentioned in the foreword

Paragraph 2.29 states that "All sections of the population depend on the country's resources, namely climate, fuel-wood, veld products, wildlife, land, water and air. The loss through depletion, degradation of these resources also affects everyone, particularly the poor.

Paragraph 13.42 says that wildlife conservation and protection will continue to be given attention during NDP 9 as well as trying to find ways and means of addressing any merging conflicts in order to mitigate negative impacts.

In addition Paragraph 10.34 emphasizes the importance of the forests and woodlands and the need to foster sustainable utilisation of these resources.

WHAT DOES NCS SAY

Paragraph 2.1.1 says that "The Government of Botswana is responsible at all times for ensuring that the natural resources are harnessed for the benefit of future generations."

While the NCS puts special emphasis on conservation of rangeland, wood, veld and wildlife resources its "counterpart goals" also include:

a. the conservation of all main ecosystems, wildlife and cultural resources
b. Protection of endangered species
c. The cost-effective restoration of degraded renewable natural resources

Objective 2 - Strategic objectives overview

2.1	Conservation efforts prioritised at national, district and local levels
2.2	Comprehensive protected area network to conserve ecosystems and species
2.3	Effective ecosystems management practices in place
2.4	Needs of species, in particular threatened and endemic species addressed.
2.5	Effective management systems for economically important non-domesticated species in place
2.6	Conservation of agricultural biodiversity
2.7	Development and implementation of methods for appropriate rehabilitation and restoration of degraded ecosystems
2.8	Indigenous knowledge recorded and conserved

Strategic targets details

2.1 Conservation efforts prioritised at national, district and levels

Justification
Limited resources for conservation require prioritisation of efforts and financial resources. Scientifically based criteria for priority setting of conservation efforts will maximize the conservation benefits to costs ratio. The NCS lists the main conservation strategy issues as:

- Rangeland and pasture degradation
- Depletion of wood resources
- Overuse of veld products
- Pressure on water resources
- Industrial and urban pollution

These areas are also included in the BSAP stocktake report as issues needing to be addressed. The BSAP has indicated areas of conservation priority at a national level, but as the levels of biodiversity threats vary from place to place and consequently the conservation needs, a finer scale district level assessment is needed for efficient prioritisation. The regional context should also be taken into consideration when setting priorities

Actions needed to achieve target

2.1.1 Develop national and district criteria for conservation priority setting, including cost benefit analysis (Ref 4.6 – Economic valuing of ecosystems)
2.1.2 Develop guidelines and framework for development of district level BSAPs , based on the national BSAP
2.1.3 Prepare Biodiversity and Conservation Strategies and Action Plans for all 10 districts

Products

- Set of criteria for conservation priority setting
- District BSAP guidelines
- District BSAPs

2.2 Comprehensive protected area network to conserve ecosystems and species

Justification
Latest research and the CBD advocate adoption of a more holistic approach to conservation, i.e. conservation of whole ecosystems or habitats, complemented by species and genetic conservation measures.

According to the BSAP Stocktake report, there are still some gaps in the current protected area network in Botswana, with some biodiversity rich areas and important species, such as many of the RD plant species currently not covered by the protected area network.

While making the protected area network more comprehensive in geographical terms, it is also important to make sure that the network includes migratory routes and that the areas set aside for conservation are large enough to support genetic diversity and evolutionary processes.

Actions needed to achieve target

2.2.1 Identify major gaps in protected area network through national and district BSAPs, and national inventories

2.2.2 Taking district BSAPs and RD species into consideration, amend protected area network, including national monuments, to make it comprehensive, addressing critical connections between national and regional protected area networks and all major biodiversity groups

2.2.3 Establish Important Plant Areas (IPAs) according to international standards and link these and Important Bird Areas (IBAs) into protected area network

Outputs/Products

- Comprehensive protected area network
- Important Plant Areas established

2.3 Effective ecosystems management practices in place

Justification
Designation of protected areas is not enough to provide effective conservation of biodiversity and the health of ecosystems. Appropriate management systems are needed as well. For effective conservation it is important not to limit *in situ* conservation measures to protected areas, but to promote and provide incentives for conservation outside these areas as well. Livestock/wildlife conflict, including access to grazing and water, is a real issue around protected areas which needs to be addressed to ensure long-term conservation of wildlife and the natural vegetation

While there is a natural fluctuation in species numbers in natural ecosystems, carrying capacity levels should be taken into consideration if one species threatens to drastically change biodiversity levels in the short term.

Consultative and participatory approaches to biodiversity conservation, which are decentralized will have the greatest impact on long-term biodiversity conservation and more clearly represent societal choice.

Actions needed to achieve target

2.3.1 Strengthen the mandate and efficiency of the CBNRM Technical Advisory Committees (TACs).

2.3.2 Review current national and regional land management systems (including rangeland and fire management practices) and land uses in terms of effectiveness in biodiversity

conservation, identifying weaknesses, strengths and best practices (Ref 10.3.6 – Regional best practices), and scope for increased community involvement in conservation activities (Ref. 3.3 – Involving communities)

2.3.3 Identify institutional capacity gaps (with special focus on the extension services) with regards to ecosystems management, and strengthen if necessary to enhance ecosystem management capacity

2.3.4 Seek and secure funding for effective long-term ecosystems management (Ref 4.6 – financial mechanisms)

2.3.5 Encourage conservation measures in designated Wildlife Management Areas (WMA)and areas bordering the protected areas through incentives and education

2.3.6 Research conservation and land-use conflict, and put research results into practice through incentives and policy framework to reduce conflict areas.

Outputs/Products

- TAC ToRs
- Strengthened and active TACs
- Guidelines on effective biodiversity land management
- Improved institutional land-use and management capacity, including the extension services
- Incentives (efficient compensation etc.) and education programme for conservation activities outside the protected area network.
- Land-use conflict management recommendations based on research
- Incentives to limit wildlife/livestock conflict

2.4 Needs of species, in particular threatened and endemic species addressed.

Justification

Many species and groups of organisms in Botswana are still data deficient and their conservation status is not known. To guide prioritisation of conservation activities, Red Data Lists (RDL) should be drawn up for animal and plant species. To be effective, the RD lists need regular review and updating. Red Data species, endemic species and other vulnerable species are likely to need additional protection both legally, controlling access and use, and from a conservation point of view, through specific management plans and *in situ* and *ex situ* conservation measures.

Under the Convention on Biological Diversity, Botswana has sole responsibility for conserving and maintaining all endemic species.

Actions needed to achieve targets

2.4.1 Establish conservation status and develop National Red Data Lists for all major animal and plant taxa in Botswana and develop mechanisms for biannual updating processes

2.4.2 Develop and implement management and recovery plans for priority taxa, including RD species

2.4.3 Support and promote *in situ* and *ex situ* conservation activities for rare, threatened and endemic species

Outputs/Products

- Up to date Red Data Lists for animal and plantl resources
- Recovery plans for all RD taxa including ex situ and in situ conservation developed and implemented

2.5 Effective management systems for non-domesticated economically important species (veldproducts) in place

Justification

Species with economic potential, such as certain veldproducts, medicinal plants, rare and endangered and "collectible' species, are especially under threat from unsustainable harvesting and poaching. Scientifically based harvesting protocols and levels, together with resource monitoring systems and appropriate enforcement are therefore essential to maintain species levels.

Actions needed to achieve target

2.5.1 Undertake inventories of the key traded (medicinal, food and collectible) animal and plant species, identify species of economic value and assess conservation status and level of protection required

2.5.2 Develop propagation and harvesting protocols for key animal and plant species with commercial value which are under potential threat from over-harvesting and encourage domestication and cultivation

Outputs/Products

- Veldproduct inventory
- Propagation and harvesting protocols for selected economic species
- Propagation and cultivation of selected veldproducts and RD plant species if appropriate

2.6 Conservation of agricultural biodiversity

Justification

Maintaining agrobiodiversity, including genetic diversity, provides options for the future in terms of traits and characteristics. Traditional strains of livestock and crop landraces are slowly being eroded in Botswana. It is important not to lose the genetic information harboured by these strains and breeds, as they could provide important traits in future breeding programmes, and conservation programmes for maintaining agrobiodiversity need to be put in place.

Agrobiodiversity also provides food security at national level and is part of traditional management systems, thus providing traditional and cultural links with the past.

Actions to achieve targets

2.6.1 Determine availability and distribution of agrobiodiversity in Botswana and identify farming systems which sustain high diversity as well as the human resource base needed to maintaining agrobiodiversity

2.6.2 Based on the above, establish a national agrobiodiversity database containing distribution of species, varieties and strains available in the country and conservation status and make provisions for regular updates

2.6.3 Design and implement a collecting programme for long-term *ex situ* preservation of agrobiodiversity.

2.6.4 Continue characterisation, research potential and use (breeding, genes for biotechnology) focusing on the groups which have genetic centres in Botswana (Ref 8.4 Bio-prospecting)

2.6.5 Based on 2.6.1, develop models and approaches, which promote a living landscape, and *in situ* preservation of agrobiodiversity at species and genotype levels. Subsequently, actively promote and support the adoption and implementation of biodiversity-friendly farming systems

2.6.6 Involve communities in *in situ* conservation of agrobiodiversity and encourage the inclusion of indigenous knowledge systems into farming systems

2.6.7 Develop mechanisms for the protection of plant breeders' rights, including landraces, linked with IPR

Outputs/Products

- Updated national agrobiodiversity database
- Germplasm collections
- Inventory of germplasm characteristics
- *In situ* conservation of agrobiodiversity and traditional practices
- Plant breeding rights covered under IPR

2.7 Rehabilitation and restoration of degraded ecosystems and habitats

Justification

To encourage rehabilitation and restoration of degraded ecosystems and habitats, it is important that "easy to use" guidelines and appropriate plant material are easily available. Restoration of habitats is

usually very expensive and prevention of unnecessary destruction cause by development and other activities should be the main aim.

The rangelands of the Kalahari serve as a biodiversity reservoir for a number of plants and animal species. However, due to over-utilisation, large areas are slowly turning into monocultures through the proliferation of opportunistic indigenous plant (bush encroachment) and animal species resulting in reduced biomass and ecosystem services. A shift to more appropriate land-use practices and active rehabilitation of degraded rangelands are of key environmental importance to Botswana, and also identified as one of five key targets in the NCS

Strategies for reducing mismanagement of biodiversity and ecosystems include linking access to resources and land-use rights with the responsibility for restoration if mismanaged (Ref 7.2 – Linking access with responsibility).

Actions to achieve targets

2.7.1 Develop easy to use guidelines on the principles of rehabilitation and restoration for various sectors (Ref 6.2 – promotion of indigenous plants)

2.7.2 Develop cost calculations for restoration and rehabilitation of destroyed habitats and include in EIA cost benefit analysis (Ref. 4.6 – economic valuation)

2.7.3 Intensify measures to rehabilitate degraded rangelands. District authorities to set targets.

2.7.4 Introduce a system linking land-use rights with the responsibility for rehabilitation and restoration if appropriate and structures for enforcement (Ref. 7.2 – Linking access with responsibility) For example, develop biodiversity damage compensation and charge system to land uses with adverse biodiversity impacts (Biodiversity impacts internalised)

Outputs/Products

- Easy to use guidelines on habitat restoration
- Habitat restoration and rehabilitation cost estimates
- Rehabilitated rangelands
- Responsibility for rehabilitation included in land allocation contracts
- Biodiversity damage compensation and charge system

2.8 Indigenous knowledge recorded and conserved

Justification

Traditional learning and knowledge, and appreciation of cultural taboos and spiritual values are not only part of the cultural heritage but may contribute to the conservation and sustainable use of the country's biological resources. Indigenous knowledge of medicinal uses of biodiversity may also provide ideas and solutions for future medical research.

With demographic changes and development the youth are less interested in absorbing traditional knowledge and practices. Initiation schools are disappearing and school curricula currently do not include traditional knowledge and practices. Unless the information is recorded, it will only take a couple of generations for it to disappear. Indigenous knowledge is closely linked to Intellectual Property Rights and measures must therefore be taken to ensure that the information is not misused. On the other hand, recorded knowledge can also help establish Intellectual Property Rights (See also targets 3.3; 3.8; 4.3; and 6.1 use of indigenous knowledge, agrobiodiversity, legal framework and awareness of indigenous knowledge.

Actions to achieve targets

2.8.1 Establish legal and financial principles and procedures for collecting and disseminating indigenous knowledge, i.e. indigenous knowledge policy (Ref 4.3 – legal framework)

2.8.2 Establish responsibility for collection and storage of indigenous knowledge (depository)and when Intellectual Property Rights (IPR) legislation is in place (Ref 4.3 – legal framework), collect and record indigenous knowledge

2.8.3 Preserve local knowledge of medicinal plants and encourage the transfer of knowledge through , for example, school market gardens and medicinal plant displays in botanical gardens (Ref 6.1 – awareness)

Outputs/Products

- Indigenous Knowledge policy, including legal and financial collecting and recording principles
- Formation of a depository of Indigenous Knowledge
- Record of local practices and indigenous knowledge
- Record of medicinal properties of local plants
- Medicinal plant displays for education

OBJECTIVE 3

SUSTAINABLE UTILISATION OF ALL COMPONENTS OF BIODIVERSITY IN BOTSWANA THROUGH APPROPRIATE LAND AND RESOURCE USE PRACTICES AND MANAGEMENT

WHY

Sustainable use of biological resources is the key to development. The nation's wealth is built on its natural resources. The current population of Botswana are custodians of this natural heritage, and it is the responsibility of this generation to make sure that we don't erode the capital we have been given, leaving our children and grand-children the same resources that we were given.

Botswana is an arid country and the dependency on rainfall renders many of the ecosystems vulnerable to climatic variation and changes. Precautionary and adaptive management procedures are therefore extremely important. Sustainable use of components of biodiversity requires a combination of legal, policy and economic incentives, a change in attitudes, i.e. a realisation of the value of biodiversity (See objective 6), education and providing people with sustainable livelihoods opportunities and options.

WHAT DOES NDP 9 SAY?

The theme of NDP 9 is "Towards realisation of Vision 2016: Sustainable and diversified development through competitiveness in global markets.

Paragraph 10.106 further states that "the depletion of natural resources affects sustainability of life systems. Thus there is a need to pay attention to their management"

WHAT DOES NCS SAY

The NCS is founded on the principle and concept of sustainable development, commonly defined as "development that meets the needs of the present generation without compromising the ability of future generations to meet their needs

The policy goals of the NCS are to:

a. increase the effectiveness with which natural resources are used and managed;
b. integrate the work of the many sectoral ministries and interest groups, so that all developments based on natural resources provide sustainable yields, minimizing environmental/social costs and satisfying restoration/conservation needs
c. ensure that future generation have access to capital stocks of natural resources, at least equal to those presently available

Objective 3 - Strategic targets overview

3.1	Biodiversity concerns and essential ecological processes adequately incorporated into national and district land use and resource planning processes.
3.2	Identification and promotion of biodiversity compatible land and resource uses, including tourism (Ref. 2.6.5)
3.3	Increased levels of community participation and use of indigenous knowledge systems in land use and sustainable management processes
3.4	Sustainable use of fuelwood and forest resources.
3.5	Rangeland/dryland biodiversity maintained through promotion of sustainable use of natural rangelands for economic growth and ecological balance
3.6	Sustainable use of wetlands ecosystems, biodiversity and ecological processes
3.7	Sustainable use of wildlife resources and wild plants
3.8	Sustainable use of agricultural biodiversity
3.9	Sustainable and efficient use and trade in veldproducts for maximum economic and livelihoods benefits

Strategic targets details

3.1 Biodiversity concerns and essential ecological processes adequately incorporated into national land use and resource planning processes.

Justification

Although Botswana is a large country with a relatively small population, competition for "good" land is still an issue and in the competition for land, biodiversity conservation purposes often lose out to development and commercial use. Unsuitable or unsustainable land use may erode ecosystem function and services, and limit future options. Appropriate land use planning, including adequate protection of important ecosystems, is therefore essential for the future well-being of the nation.

Actions required to achieve target

3.1.1 Institutionalise the operational guidelines of the ecosystem approach and the BSAP into resource management and sustainable land use strategies at all levels in institutions concerned with policy, planning, conservation and management of biological resources, through a). Adaptation of guidelines and planning manuals; b) Preparations of information materials c) Training of staff (See 4.4 – capacity building)

3.1.2 Integrate biodiversity concerns into Strategic Environmental Assessment (SEA) guidelines and carry out SEAs for major policies and programmes

3.1.3 Include biodiversity consideration into national audits and accounts (Ref 5.7.1 – cost of pollution; 4.6 – environmental costs).

3.1.4 Designate appropriate areas for biodiversity conservation, including wildlife corridors, making allowances for migration routes and other species requirements as appropriate and gazette (e.g. WMAs). (Ref. 2.3.5; 2.2)

Output/Products:

- Updated Planner's Manuals
- Ecosystems guidelines for planning
- Strategic Environmental Assessment (SEA) for all policies and strategies affecting the management of biodiversity
- Environmental cost column in national accounts
- Additional conservation areas established, including wildlife corridors, according to need, including migratory routes, and existing land allocated as WMAs gazetted according to demand

3.2 Identification and promotion of biodiversity compatible land and resource uses.

Justification
Appropriate land-use management will contribute to more efficient biodiversity use and conservation of resources. Biodiversity and pristine ecosystems provide much of the base for the tourism industry in Botswana, and an integrated approach to tourism and biodiversity management will benefit both sectors (Ref. 2.6.5).

Actions required to achieve targets
3.2.1 Evaluate the impact of different land management policies on biodiversity conservation
3.2.2 Develop land use best practices guidelines and consider creation of incentives for appropriate land-uses, taking regional CBNRM experiences into consideration (Ref 4.1.2 – Review of policies and incentives).
3.2.3 Investigate tourism potential in support of biodiversity and landscape conservation and promote set up conservation partnerships where relevant.
3.2.4 Promote integrated landscape planning, with priority given to around protected areas and urban areas

Outputs/Products
- Land use best practice guidelines
- Ecotourism plans
- Integrated landscape plans
- Report on the effects of land management policies

3.3 Increased levels of community participation and use of indigenous knowledge systems in land use and sustainable management processes

Justification
Consultative and participatory approaches to biodiversity conservation will have the greatest impact on long-term biodiversity conservation, and more clearly represent societal choice – thus have greater support from communities and other custodians of biodiversity. Indigenous management processes already exist, but are not always considered. Increased benefit sharing and participation in resource management will help to ensure a sense of ownership and commitment to biodiversity conservation.

Actions required to achieve targets
3.3.1 Diversify (geographically and based on natural resource use) and strengthen support to CBNRM (Ref.6.5 – involvement of communities and NGOs)
3.3.2 Re-establish effective Common Property Resources (CPR) regimes, including access to communal resources, and develop a plan for implementation of Community Based Strategies
3.3.3 Integrate poverty alleviation measures, in accordance with the Millennium Poverty Reduction Target and Vision 2016, into biodiversity conservation policies and programmes
3.3.4 Strengthen mechanisms to allow communities to engage effectively in policy dialogue, planning, design and management of natural resources and biodiversity in community areas, and thereby allow for inclusion of indigenous knowledge systems and traditional practices (Ref 6.5 – involvement of communities and NGOs).
3.3.5 Strengthen the capacity of NGO and Community Based Organisations (CBOs) in sustainable biodiversity use and management through human resources development

Outputs/Products
- CBNRM programme expanded
- Implementation plans for community based strategies
- Combined Biodiversity conservation and Antipoverty programmes
- Improved CBO and NGO capacity in sustainable land use and biodiversity management

3.4 Sustainable use of fuel wood and forest resources.

Justification

Land clearing and unsustainable fuel wood harvesting or logging will lead to decline in forest and woodland vigour, diversity, and actual area. There are already signs of emerging deforestation in Southeast Botswana due to unsustainable levels of fuelwood collection. Alternative energy sources and fuelwood management practices already exist, but a coordinated approach to the use of energy resources is needed to achieve maximum impact.

Actions needed to achieve target

3.4.1 Update and approve the Forestry Policy and subsequently the Forestry Act
3.4.2 Based on the updated Forestry Act establish enforcement mechanisms.
3.4.3 Update the biomass inventory and assess forestry biodiversity trends and patterns
3.4.4 Identify and introduce alternative energy sources through a) Inventory of available alternatives; b) evaluation of alternatives; c) financial incentives introduced for environmentally friendly energy sources; d) Information campaign
3.4.5 Promote and establish network of fuelwood plantations and community woodlots using indigenous species in all 10 districts
3.4.6 Develop Forest Reserve Management Plans

Outputs/Products

- Updated Forestry policy and Forestry Act
- Updated biomass inventory
- Financial incentives for environmentally friendly energy sources
- Inventory of alternative energy resource
- Effective energy use information campaigns
- Fuelwood plantations
- Management plans for all forest reserves

3.5 Rangeland/dryland biodiversity maintained through promotion of sustainable use of natural rangelands for economic growth and ecological balance

Justification

Poor rangeland management, i.e. overstocking and heavy grazing lead to land degradation, species substitution, and long-term decline in land productivity and biodiversity levels. Much work has already been done in the area of rangeland management, but rangeland degradation and negative impacts on the natural vegetation is still a major problem in many parts of Botswana and interventions to reduce and reverse rangeland degradation is therefore needed.

Actions needed to achieve target

3.5.1 Survey rangeland biodiversity (ref Indigenous Vegetation Project and BRIMP) and continue rangeland monitoring, including bush encroachment, allocation and use of water points, stocking and grazing levels, donkey population, fire etc.
3.5.2 Continue extension on rangeland management including conservation measures, stocking rates and alternative uses such as game farming to encourage sustainable use
3.5.3 Review the Tribal Grazing Land Policy and other legal and policy instruments related to grazing rights and the use of communal land
3.5.4 Complete gazetting of Wildlife Management Areas (WMAs), grazing areas and mixed farming areas, and develop and implement Management plans.
3.5.5 Introduce and implement appropriate water charges - Ref 5.5 - Water
3.5.6 Provide incentives to reduce overgrazing and to restore rangeland degradation, as per the recommendations in the National Conservation Strategy and recommendations by the Indigenous Vegetation Project (4.1 – policies and 4.6 – Charges))
3.5.7 Encourage and promote schemes to clear and utilise bush encroachment, and link with the search for alternative energy sources (3.4.4 – inventory of alternative fuel sources) and community participation in conservation (Ref. 3.3).

Outputs/Products
- Up to date BRIMP data
- Extension to improve rangeland practices
- Adjustment to TGLP
- All WMAs gazetted
- Grazing areas and mixed farming areas gazetted
- Water charges in place and collected
- Specific programmes and incentives aimed t reducing over-grazing and rangeland degradation.

3.6 Sustainable use of wetlands ecosystems, biodiversity and ecological processes

Justification
Botswana's wetlands are unique, both from a global and national perspective. Maintenance of wetlands ecosystem function is critical to the long-term viability of these systems, biodiversity conservation and societal needs. Threats to wetlands include hydrological change, Invasive Alien Species (IAS), climate change, unsustainable use and pollution. Prevention is always much cheaper than cure and appropriate management of Botswana's wetlands will be cost effective in the long term.

Actions needed to achieve target
3.6.1 Approve wetland policy and start implementation
3.6.2 Implement wetland management strategy making provisions for increased community participation in wetlands management and planning, and give special consideration to issues of access
3.6.3 Continue implementation of the Ramsar Convention on Wetlands and wetland management plans
3.6.4 Enhance national capacity for wetlands management, protection regulation and enforcement and integrate the principles of ecological water needs in planning and implementation
3.6.5 Strengthen regional river basin management collaboration

Outputs/Products
- Official Wetlands policy
- Implementation of wetlands management strategy
- Implementation of Ramsar, Okavango (ODMP) and Makgadikgadi management plans
- Improved wetland management capacity
- Transboundary river basin management collaboration programmes

3.7 Sustainable use of wildlife, wild plants and other biological resources

Justification
Botswana's biological heritage is a resource capital, which needs to be managed properly for optimum profit: economic, social and biological. The ecosystems and species not only sustain ecological processes, vital for humankind, but also provide the resource base for a large part of the tourism industry in Botswana, sources for alternative livelihoods (veldproducts) and genetic potential for the future.

Although there are still gaps in population and distribution data for all components of biodiversity, there is enough evidence to show that populations of some species (e.g. Springbok) are decreasing, while others, such as elephants and some tree species, including *Acacia mellifera* and *Dicrostachys cinerea* are on the increase, and have in some cases reached levels which are now threatening other components of biodiversity. A coordinated and coherent management approach, which takes wildlife conflict issues and rights and access to biodiversity resources into consideration, is essential to achieve long-term sustainability.

Actions needed to achieve target

3.7.1 Develop a comprehensive strategy and programme for sustainable use of wildlife resources including setting of quotas, monitoring or resources (Ref. 1.3.7 and 1.3.8 – National and community monitoring of resources) and strengthening of enforcement capacity at the national level
3.7.2 Assess current intervention strategies for community livelihood loss due to wildlife conflict and promote farming systems which minimise wildlife conflict through the extension services, and strengthen the effectiveness of these programmes in consultation with affected communities (Ref 2.3.6 – Reduction of land-use conflicts)
3.7.3 Develop community capacity to utilize natural resources in income generating activities and to secure access for sustainable use strategies (Ref 3.3.5 - Capacity; Objective 7- Access and benefits)
3.7.4 Provide communities and individual with livelihoods options through assisting with assessment of potential markets for the sale of natural resource products and facilitated access through credit and enterprise schemes, while linking with quality control and resource allocation permits as appropriate (Ref 6.6.2 – Women's credit schemes; 3.9.2 - Veldproducts
3.7.5 Develop code of conduct for traditional healers and users of medicinal species (7.3.2 - IKS)

Outputs/Products
- Wildlife resource use programme/strategy
- Wildlife conflict solutions including alternative farming systems and livelihoods options
- Incentives to prevent livestock-wildlife conflict
- Code of conduct for traditional healers

3.8 Sustainable use of agricultural biodiversity

Justification
Agrobiodiversity is an important source of genetic material, providing a buffer and options for adaptation to changing conditions. Modern agricultural practices favouring monocultures and the use of exotic varieties, breeds and hybrids, increase Botswana's vulnerability to widespread crop failure through for example diseases, drought and frosts. The current trend in Botswana is that indigenous varieties, landraces, strains and species, together with their genetic potential, are slowly disappearing.

Botswana is the centre of diversity for *Vigna spp* (Cowpeas) and a secondary centre of diversity for *Citrullus spp* (melons) (Mathodi, S. M., 1992) and thus harbours an invaluable genepool for these two species, which needs to be preserved.

Actions needed to achieve target
3.8.1 Implement programme and strategy for maintenance of agrobiodiversity (breeds and strains) and identify and promote best practices (Ref 2.7 – Use of indigenous species in habitat restoration)
3.8.2 Create awareness about the value of genetic diversity and locally adapted breeds and promote indigenous farming systems which encourage high diversity (Ref. 2.6 – Conservation of agrobiodiversity)
3.8.3 Improve availability of traditional and improved seed varieties and breeding materials to smallholder and other farmers.
3.8.4 Review Government seed distribution/drought relief and encourage distribution of more traditional varieties.
3.8.5 Encourage the uses of traditional varieties and strains/breeds of livestock and crops for special uses for the development and support of niche markets that will in turn encourage individuals, communities and institutions take interest in availability of the propagation materials.
3.8.6 Educate farmers about the benefits and risks of Genetically Modified Organisms, integrated pest management and the pros and cons of hybrid and improved varieties versus land races and traditional varieties (Ref 5.6 – threats to biodiversity; 8.2.3 – GMO guidelines)

Outputs/Products
- Directory of best agrobiodiversity practices
- Programmes to promote agrobiodiversity
- Wider choice and availability of seed and breeding material

- Increased use of traditional varieties and strains/breed of crops and livestock, and traditional varieties included in seed distribution and drought relief
- Farmers aware of risks and rewards related various types of seeds and of integrated pest management

3.9 Sustainable and efficient use and trade in veldproducts for maximum economic and livelihoods benefits

Justification

Poverty and lack of alternative livelihoods cause some communities to rely heavily on natural resources, putting these under pressure. In the absence of proper management regimes and known sustainable harvesting levels any increase in use and other pressure factors may affect the sustainable utilisation of these resources.

While some economically important species, such as *Hoodia currorii*, *Terfizia pfielii (Kalahari truffle)* are potentially under threat from over harvesting, others are probably currently being under-utilised. Current quota and resource allocation do not guarantee sustainability and do not lead to economically optimal resource use.

Actions required to achieve aim

3.9.1 Develop and approve veldproduct policy

3.9.2 Decentralise harvest allocations of non-threatened species to a multidisciplinary team chaired by the Tribal Authority (Chiefs) and provide them with the necessary tools and guidelines to ensure sustainable use and transparency and accountability in the allocation process. National control should be maintained over the RD species and species threatened by overexploitation.

3.9.3 Extend the Agricultural Resources Board (ARB) veldproduct monitoring system to include models for quota setting, carrying capacity guidelines, monitoring and enforcement capacity in local and national resource users, organisations and regulatory agencies

3.9.4 Identify enterprise development opportunities and alternatives in community based natural resources and conduct product feasibility studies and market assessments to form the basis for viable industries, taking the regional context into consideration (Ref 3.7.4 – Use of natural resources; 3.9.8 – craft centres; 6.6.2 – Women's credit schemes).

3.9.5 Facilitate access through credit and enterprise schemes, while linking with quality control and resource allocation permits as appropriate (Ref 3.7.4 – Use of natural resources, 10.3 - Regional markets, 6.6.2 – Women's credit schemes.Object 7 – Access and benefit-sharing)

3.9.6 Introduce regulated tendering for commercial resource rights, taking precautions not to dis-empower poorer households.

3.9.7 Expand Natural Resources Allocation (NRA) programme to wildlife, rangelands and key veldproducts

3.9.8 Support the setting up of commercial village craft centres and let prices be determined by the forces of supply and demand at these centres (Ref 3.9.4 – market opportunities and credit schemes)

Outputs/products

- Veldproduct policy
- Guidelines on harvest allocation aimed at Tribal Authorities
- Veldproduct monitoring system and standards in place
- Veldproduct harvesting protocols and models for quota setting for the veldproducts threatened by overuse
- Product and market feasibility reports for veldproducts with commercial potential
- Start up credit schemes for small biodiversity based businesses
- System and guidelines for tender of commercial resource rights
- Village craft centres

OBJECTIVE 4

AN INSTITUTIONAL ENVIRONMENT, INCLUDING FINANCIAL AND HUMAN CAPACITY, CONDUCIVE TO EFFECTIVE BIODIVERSITY CONSERVATION, SUSTAINABLE USE AND MANAGEMENT

WHY

An institutional environment conducive to effective biodiversity conservation, sustainable use and management refers to an institutional climate and set-up which includes cross sectoral coordination, political will, appropriate economic incentives, adequate institutional structures and capacity, and a legal system to support and encourage conservation and sustainable use and management of Botswana's biological resources. There are already many institutional structures in place, but there is still a need for improvements, especially in the fields of planning and coordination, and legislation for the protection of Botswana's genetic resources.

WHAT DOES NDP 9 SAY?

There is a need during NDP 9 to fully integrate environmental issues into development policies, programmes and projects.

During NDP 9 the development of an appropriate legislative framework and the necessary institutional reform to monitor and enforce such legislation will be encouraged (Paragraph 4.29).

Paragraph 14.35 talks about the need to upgrade NCS institutions to meet the cross-sectoral challenges of environmental management during NDP 9. This requires increased cooperation, networking and partnership amongst Government institutions so as to attain sustainable development. Effective operational links are important to foster a continued policy review and reform.

WHAT DOES NCS SAY

Paragraph 4.6.6. states that "The Government intends to introduce an Act, the NCS Act, specifically in support of the Strategy. The need for such an Act derives directly from the importance of providing a comprehensive policy framework for the NCS and through it a vehicle for coordinating all existing policies and subsequent legislation, which relate to the NCS goals and objectives, i.e.:

a. Defining the responsibilities of all those organisations, upon which the success of the NCS depends
b. Making preparations of both EIAs and associated statements mandatory for all public and private developers.
c. Establish an enabling framework for both the provision and coordination of the legal, institutional, manpower and monetary resources required for the effective implementation of the NCS"

Strategic targets overview

4.1	Cross sectoral coordinated approach to national biodiversity conservation and use with roles and responsibilities clearly defined and mechanisms in place to facilitate coordination
4.2	Enhanced institutional biodiversity capacity at all levels for effective planning, research, monitoring and legal enforcement, as identified in the biodiversity training needs assessment
4.3	National *in situ* and *ex situ* conservation capacity strengthened
4.3	Financial mechanisms and finance in place for biodiversity related activities
4.5	Economic valuation of ecosystems and environmental costs developed and utilised for appropriate cost benefit analysis

Strategic targets details

4.1 A cross sectoral coordinated approach to national biodiversity conservation and use with roles and responsibilities clearly defined and mechanisms in place to facilitate coordination

Justification

Biodiversity issues and responsibilities are currently divided among a large number of government institutions, and according to sectoral lines. Fragmentation of efforts can create duplication, competition for funds, general inefficiency and even have negative effects on specific components of biodiversity. A strong biodiversity coordinating body and a framework for coordination is therefore needed.

Actions to achieve targets

4.1.1 While overall national responsibility for biodiversity conservation has been assigned to MEWT, specific roles for various components of biodiversity and management between government, NGOs and the private sector clarified and responsibilities assigned

4.1.2 Review the NCS and other relevant sectoral policies, action plans, incentives, subsidies and other programmes of government ministries, departments and institutions, and NGOs for biodiversity issues, in order to avoid duplication, to harmonise activities and to identify and address perverse incentives and subsidies if necessary

4.1.3 Based on the BSAP, National Conservations Strategy (NCS) and the policy review, develop an integrated strategic policy framework to address cross cutting issues such as decentralisation and local management, incentives and regulatory framework, integration with international conventions, CBD ecosystem approach, threats to biodiversity and measures to mitigate declines in economic activities due to HIV/AIDS

4.1.4 Establish and staff and environmental policy formulation and evaluation unit for intersectoral planning and policy formulation, and develop and implement an integrated and intersectoral policy framework for sustainable natural resource management and biodiversity conservation

4.1.5 At district level form biodiversity crosscutting committees under the District Development Committees (DDC), linking with the Technical Advisory Committees (TACs) (Ref 2.3.1 – Technical Advisory Committees), with mandate to coordinate biodiversity issues and set up biannual meetings

4.1.6 Coordinated by MEWT, set up permanent task force groups for the various components of biodiversity conservation and management, with representative from all sectors, focusing on various components of biodiversity conservation and management. Use these groups for policy advice and reference and link with Technical Advisory Committees and District Development Committees (Ref 4.1.5 – District Development Committees; 2.3.1 – TAC)

4.1.7 Establish a multi sectoral cross sectoral resource allocation and charge model

4.1.8 Streamline the BSAP into the State of the Environment reporting and other national environmental programmes

Outputs/Products
- Biodiversity roles and responsibilities assigned
- Inter-sectoral policy planning unit and mechanisms to encourage decentralised and inters-sectoral and inter-ministerial planning
- Policy framework conducive to biodiversity conservation and sustainable used
- District cross cutting biodiversity committees
- Biodiversity mainstreamed into the planning process
- Biodiversity task force groups
- Resource allocation models
- BSAP activities included in SOER

4.2 Comprehensive legal framework for the protection of biodiversity with appropriate mechanisms in place for implementation and enforcement

Justification
In line with the NCS, the BSAP Stocktake has concluded that existing laws to protect biodiversity are outdated and do not adequately protect biodiversity. Despite the recommendations in the 1991 NCS for a National Conservation Strategy Act, there is still no overarching legal framework covering biodiversity or the environment as a whole. As a result, biodiversity related legal matters usually require interpretation of existing laws. For example, CITES listed plants and some of the economically important veld plants are not covered by any legislation. Import and export regulations mainly cover disease causing organisms and noxious agricultural weeds, but do not address Genetically Modified Organisms (GMOs), and Invasive Alien Species (IAS). The framework for granting research permits does not adequately address movement and access to genetic resources, including potentially valuable micro-organisms. Indigenous knowledge and intellectual property rights are not adequately covered by today's laws, and there is a need for laws to regulate new concepts such as biotechnology. Most importantly, access to resources and benefit-sharing issues are not adequately addressed. This has led to a situation today where there is very little control over the movement and use of Botswana's genetic resources.

The Environmental Impact Assessment Act has been under preparation since 1996, but is still not official. This Act will improve the current situation, but there is still a need to pull in existing laws and regulations addressing component of biodiversity under one umbrella and where necessary amend or complement existing laws.

It is vital to harmonise any new legislation and regulations with regional legislation, aiming to match the most stringent and comprehensive laws.

Legal issues concerning Intellectual Property Rights (IPR) and Indigenous Knowledge (IK) are addressed under Objective 7 – Access and Benefit Sharing

Actions to achieve target
- 4.2.1 In line with the recommendations of the NCS and the BSAP establish an over-arching National Conservation Act or other omnibus suitable legislation framework to cover the various aspects of environmental issues including biodiversity
- 4.2.2 Identify gaps in current legislation with regards to national, regional and international standards and needs, relating to biodiversity conservation and sustainable use of biodiversity. Update and complement the legal framework accordingly, while aiming to harmonise laws within the region
- 4.2.3 Empower all law enforcement organisations and departments to implement the biodiversity legal framework, including related laws, policies and bye-laws (Ref 5.4.3 – enforcement of EIA)
- 4.2.4 Develop incentive strategies which promote community involvement in enforcement activities
- 4.2.5 Strengthen and streamline licensing and permit system for import and export of biodiversity components, including for research (Ref 1.3.1 – Research permits), to include transparent mechanisms, printed guidelines and set time/performance targets.

Outputs/Products
- Environmental umbrella act
- List of gaps in current legislation
- Comprehensive legal framework for biodiversity conservation and sustainable use and protection of all components of biodiversity
- Improved enforcement capacity at national, district and local level
- Effective import and export licensing system for biological resources

4.3 Enhanced institutional biodiversity capacity at all levels according to BSAP needs

Justification
Biodiversity is a technical subject and a general understanding of biodiversity related issues is currently limited to a few specialist institutions within government and civil society. In particular government institutions concerned with policy, planning and legislation and extension need to strengthen their understanding of biodiversity issues.

Although Botswana has good environmental and ecological research capacity there are a limited number of trained botanists and scientists engaged in small animal, microbial research and biosystematics (taxonomy), which are essential for identification and understanding of biodiversity. Identification of plant and micro-organism species is currently often done outside the country.

To improve efficiency, avoid duplication and facilitate access to data, the BSAP Stocktake has proposed the establishment of Centres of Excellence or focal organisations for various types of organisms. It is proposed that these institutions, preferably stable government or university institutions, host reference collections and related data.

Actions to achieve target

4.3.1 Establish MEWT/NCSA district offices/officers to improve communication between the national and district levels

4.3.2 Review existing institutional infrastructure and capacity with regards to planning, research, monitoring and legal enforcement in biodiversity conservation and sustainable use (Ref 5.6.8 – Train customs' staff)

4.3.3 Appoint and establish national or regional, if relevant) centres of excellence for biodiversity key groups (invertebrates, flora, birds fungi, micro-organisms etc. Responsibility for wildlife has already been established through DWNP), clarifying institutional responsibilities and draw up TORs to include establishment and curation of national biodiversity collections. Mechanisms for depository of data, and hosting of data etc (Ref. 9.3.1 – Access to data; 1.2.2. – Housing of data and reference collections).

4.3.4 Strengthen the Agricultural Resources Board (ARB) for effective veldproduct management and monitoring

4.3.5 Strengthen Ministry of Environment, Wildlife and Tourism (MEWT) capacity for effective management of Environmental Impact Assessments (EIAs), including preparation of national EIA guidelines and quality control of EIAs (Ref. 5.4.1- EIA guidelines)

4.3.6 Review and evaluate existing taxonomic and biosystematics capacity and infrastructure and provide adequate funding for strengthening national ability to identify organisms of major groups (plants, mammals, birds, fish, pests)

4.3.7 Compile and publish a national and regional register/directory of bio systematic expertise

4.3.8 Actively encourage training to fill gaps as identified in biodiversity training needs assessment

4.3.9 Raise awareness of environmental and biodiversity economics among government planners

4.3.10 Organise study tours for key planning officers to study new ways of implementing and incorporating environmental planning principles into national, district and town planning procedures and decision-making. South Africa, is at the forefront of implementing innovative methods to encourage mainstreaming of environmental and biodiversity concerns into planning processes and decision-making

Outputs/Products

- NCSA district offices and officers established to improve coordination between the districts and the national level.
- Capacity assessment clarifying infrastructure needs related to biodiversity
- Centres of Excellence (focal point institutions) with responsibility for housing of data, reference collections and expertise for main biodiversity groups
- Capacity of Agricultural Resources Board strengthened
- National Environmental Impact Assessment (EIA) guidelines
- Mechanisms for efficient EIA quality control institutionalised
- National biosystematic (taxonomic) capacity established
- National Environmental Law capacity established
- National and regional directory of biosystematics' expertise
- Improved national human biodiversity capacity
- Raised biodiversity awareness among planners

4.4 National *in situ* and *ex situ* conservation capacity strengthened

Justification

Existing *ex situ* facilities and curation capacity need strengthening to ensure that that the quality of existing collections is maintained, and in order to accommodate future *ex situ* conservation needs. National gene bank, herbaria, museums and other institutions holding national collections need support and fund to ensure long-term curation of existing and future collections.

Actions to achieve targets

4.4.1 Develop comprehensive *ex situ* genetic resources conservation programmes for wild and domesticated animals and plants (Ref 1.2.3 – Collecting programmes)

4.4.2 Strengthen human capacity and infrastructure in existing herbaria, museums, national parks and gene banks

4.4.3 Develop a living collection of medicinal plants at National Botanical Gardens, and duplicate in other botanical gardens as appropriate

Outputs/Products

- *Ex situ* resource conservation programmes
- Improved national capacity and infrastructure for curation and management collections
- Living collection of medicinal plants

4.5 Financial mechanisms and finance in place for biodiversity related activities

Justification

Limited funds and access to funding is probably the biggest limiting factor affecting biodiversity related activities. Donor funding for environmental NGOs has been drastically reduced in the last couple of years, and government funding for environmental activities is also limited. Procedures to obtain existing funding from donors and government are also lengthy and complicated.

Funding of biodiversity and ecosystem conservation measures should be seen as an investment into the future, as our biological resources are the foundation of many livelihoods. Biodiversity and the environment can also be used to generate funds, i.e. through tourism and recreation activities and through user charges. It is important that there are mechanisms in place to channel these funds back into activities, which support biodiversity, and environmental conservation activities.

Actions to achieve target

4.5.1 Develop funding mechanisms and funding guidelines for biodiversity activities, e.g. reinvest biodiversity charges towards conservation and rehabilitation in line with the proposed Environmental Fund under NDP9 (Ref. 3.1.4 – national audit; 2.3.4 – Seek funding)

4.5.2 Extend legal requirements to include the "polluter pays principle" and extend to reasonable levels of rehabilitation of destroyed habitats, and combine with adequate

enforcement mechanisms.

4.5.3 Through the national accounts, provide sufficient financial means to ensure good curation and maintenance of invaluable national *ex situ* and *in situ* genetic collections (Ref. 3.1.4)

Outputs/products

- Biodiversity charges account for deposit of pollution charges, Environmental Impact Assessment charges for biodiversity conservation and research use.
- Biodiversity fund and guidelines for use
- Legal framework enforcing the polluter pays principle and habitat rehabilitation
- Funding for appropriate curation of national collections

4.6 Economic valuation of ecosystems and cost benefit analysis including environmental costs

Justification

Natural resources are often seen as infinite, and as it is difficult to put a definite economic value on biodiversity and ecological processes the true cost of misuse or depletion is often not considered.

Appropriate economic valuation is needed to measure sound environmental management versus the cost of inaction, restoration or disaster relief and other activities affecting the environment and biodiversity. For the poorest, under-valued market prices can encourage over-harvesting in order to increase volume and thus income, but low market prices can also serve as a disincentive for use of biodiversity. Full insight in the cost and benefits of biodiversity will contribute to greater appreciation for biodiversity.

Actions to achieve targets

4.6.1 Incorporate environmental costs into national accounts and establish specific resource accounts for wildlife, veldproducts, wood and grazing resources (Ref 3.1.4 – National accounts)

4.6.2 Train planners in environmental economics at national and district levels

4.6.3 Value and carry out cost-benefit analysis of the most important natural resources, including the livestock and wildlife sectors, and ecosystems

4.6.4 Develop case study material for Botswana to show how environmental costs can be estimated

4.6.5 Assess the net benefits of biodiversity conservation to give conservation a high priority among policy makers and resource users through linkages with poverty reduction etc.

Outputs/Products

- Resource accounts
- Planners trained in environmental economics
- Calculated value established for selected ecosystems and natural resources
- Case study on estimation of environmental costs
- Estimation of net benefits of conservation

OBJECTIVE 5

COPING WITH ENVIRONMENTAL CHANGE AND THREATS TO BIODIVERSITY

WHY

Prevention is usually a much better and cheaper solution than cure. Addressing threats to biodiversity before they happen will therefore be cost effective in the long-term.

The main threats highlighted during the BSAP Stocktaking phase are addressed under this objective. The BSAP also makes provision for other minor or less known threats and hitherto unknown threats, which require more research to determine their effects on biodiversity levels.

Of all the threats, climatic change poses the greatest challenge as its effects are still not sufficiently known and as it cannot be addressed directly. Rangeland degradation and hydrological change provide more direct and tangible threats to biodiversity, although also affected by climate change to some extent. We have the means and technologies to reduce the effects of these threats, and the main challenge is to find solutions, which are biologically, politically and economically acceptable.

WHAT DOES NDP 9 SAY?

Paragraph 4.40 says that "inefficient natural resources utilisation, threats to biodiversity and wetlands conservation, pollution and waste management and unsustainable use of firewood for energy" will be addressed in conjunction with development opportunities and constraints.

Para 13.80 states that the Exotic Species Policy will endeavour to rationalise the existence of exotic species and institute measures that will minimise their interaction with free ranging indigenous wild populations. It will also provide a framework for regulating future introductions and the management of exotic species

Concerning disaster management, Paragraph 4.52 says that Government has identified the need to integrate disaster management into development planning. A disaster management policy which encompasses the elements of mitigation, preparedness, response and recovery and development has been put in place.

WHAT DOES NCS SAY

Threats to components of biodiversity are covered under each main sector.

Of all the issues, degradation of rangeland pastures is recognised to be the hardest to resolve (5.3)

In paragraph 6.2.5 it is stated that beneficial conservation changes expected through the NCS include: the substantial removal of the present principle sources and sites of pollution through a combination of incentives and improved controls.

Strategic targets overview

5.1	Early warning mechanisms and mitigation plans in place to minimise effects of natural disasters on biodiversity.
5.2	Conservation strategies and facilities in place to address identified threats.
5.3	Effects of climate change on vegetation, fauna and livelihoods investigated to allow for appropriate responses
5.4	Reduced levels of habitat destruction and degradation
5.5	Sustainable water use and management with the objective to maintain biodiversity levels
5.6	IAS (including GMOs) management strategies and implementation and enforcement capacity in place
5.7	Water and air pollution levels reduced to reduce biodiversity loss
5.8	Improved understanding of threats to biodiversity

Strategic targets details

5.1 Early warning mechanisms and mitigation plans in place to minimise effects of natural disasters on biodiversity

Justification

Prevention and preparedness is usually much cheaper than restoration and rehabilitation of destroyed habitats and ecosystems. Rare and endangered species can go extinct as a result of severe natural disasters, such as bush fires, drought, flooding and pest outbreaks. It is important to improve our capacity to predict natural disasters from a human point of view, but also to put structures, recovery and mitigation plans and *ex situ* conservation facilities in place which will limit the negative effects on biodiversity. With climate change the fluctuation in rainfall is predicted to increase, resulting in more incidents of droughts and floods.

Actions to achieve target

5.1.1	Develop national environmental indicators and monitoring sites as part of a long-term biodiversity/environmental early warning monitoring programme through a peer reviewed process and implement programme (Ref 1.3 – monitoring and trends)
5.1.2	Based on the above monitoring programme, set up a national biodiversity early warning system with defined mechanisms of response action, which is linked with regional and international early warning programmes (ref. 10.3.3 – regional cooperation).
5.1.3	Establish channels for making early warning results and decision regularly available to the Disaster Management Office and to policy makers, planners and managers of biodiversity and other stakeholders.
5.1.4	Based on the early warning system, design specific mitigation plans and put necessary infrastructure in place to cope with potential natural disasters
5.1.5	Mainstream environmental disaster management into the national development budget (Ref 4.6 – financing mechanisms)

Outputs/Products

- Environmental and biodiversity early warning indicators established
- Monitoring sites and programmes established
- Early warning reports circulated regularly
- National biodiversity early warning system in place
- Natural disaster mitigation plans established for key disaster areas including climatic disasters, fire, pests and diseases affecting biodiversity.
- Environmental disaster management included in national development budget

5.2 Conservation strategies and facilities in place to address identified threats

Justification
Coping with environmental change and threats include putting conservation measures in place, including *ex situ* conservation, and to reduce loss of biodiversity by minimising of potential threats through appropriate actions in response to early warning information.

Habitat reduction and degradation in covered in detail under 5.4.

Actions to achieve goal
- 5.2.1 Make detailed assessment of current biodiversity threats by district and develop appropriate prevention strategies with identified key actors (District BSAPs – 11.3) and links to the national biodiversity early warning system (ref 5.1.2); Report results in the State of the Environment Report and distribute to all involved sectors
- 5.2.2 Design recovery and management plans for all RD species and carry out *ex situ* conservation of appropriate species (Ref 2.4.3 – conservation of RD species)

Outputs/Products
- Detailed list of main biodiversity threats by region, and related prevention strategies, specifying responsibilities for implementation
- RD species management and recovery plans
- Selected species conserved *ex situ*

5.3 Effects of climate change on vegetation, animals and livelihoods investigated to allow for appropriate responses

Justification
Climate change will alter the species assemblage and ecosystem structures, e.g. the extent of the mopane belt, which will have socio-economic implications. Even if theses changes are gradual they will have an effect on livelihoods and conservation management activities, and improved understanding of the effects is therefore important.

Actions to achieve targets
- 5.3.1 Research effects of climate change on biodiversity, focusing on impacts on vulnerable species and areas (Ref. 10.3.3 – regional cooperation)
- 5.3.2 Integrate drought and other climatic concerns into sectoral planning especially agriculture (Ref 5.1.5 – environmental disasters)
- 5.3.3 Establish breeding programmes for drought tolerant agrobiodiversity varieties and breeds and develop appropriate agricultural methods

Outputs
- Climate trends established
- Species vulnerable to climate change included in Red Data listings
- Plans to counteract the effects of drought and other climatic threats
- Drought tolerant varieties and breeds

5.4 Reduced levels of habitat destruction and degradation

Justification
Habitat destruction erodes ecosystem function and services. Habitat restoration is usually very expensive and the cost is usually absorbed by society rather than by the entity responsible for the damage. Prevention of habitat destruction will therefore be cost effective in the long-term. The true cost of habitat

destruction, including environmental costs, of any development needs to be reflected in any cost/benefit calculations.

Habitat destruction and degradation are caused by direct destruction of habitats through construction, but also through poor land-use management practices.

Actions to achieve targets

5.4.1 Develop national EIA guidelines to cover all sectors and incorporate EIA into the sub district development plans
5.4.2 Develop and set standards for EIAs, including biodiversity and habitat considerations, for all sectors
5.4.3 Enforce EIA and mitigation measures through appropriate penalty scheme for non compliance (4.3.3 – Enforcement capacity, 7.2.2 – EIA follow-up)
5.4.4 Critically examine the effects of the Agricultural Policy, of 1991 especially the accelerated fencing component and the Tribal Grazing Land Policy (TGLP), on biodiversity in the rangelands, and revise if necessary (Ref 4.1.2 – Review of policies)

Outputs/Products

- National EIA guidelines and standards published
- EIA procedures and requirements incorporated into sub district development plans
- Mitigation activities as identified by EIAs enforced
- The effects of fences and grazing and use rights on biodiversity levels established

5.5 Sustainable water use and management with the objective to maintain biodiversity levels

Justification

Hydrological change is a major threat to biodiversity in Botswana. Water is a valuable resource, which must not be over exploited. Appropriate management of water resources, including groundwater includes monitoring of quality and quantity, appropriate planning and management of water supplies, and access rights. At the moment water release calculations, for the major dams, necessary for downstream biodiversity, are not being implemented

Actions to achieve target

5.5.1 Promote wise use of water through: a) awareness campaigns; b) support of Department of Water Affairs' WDM programme; c) improved allocation of water resources; d) up-dated water accounts; e) increase in direct re-use of wastewater
5.5.2 Include environmental impacts of dams into national planning and improve water supply planning to adequately include down stream water issues
5.5.3 Include monitoring of aquatic species, including IAS, in water monitoring programmes (Ref 5.6.2 – Invasive and Alien Species survey)
5.5.4 Implement water release calculations as stated in dam Environmental Impact Assessments
5.5.5 Regularly monitor groundwater levels and characteristics
5.5.6 Enforce EIAs in connection with ground water exploration and borehole schemes

Outputs/Products

- Water awareness information materials
- Up do date water accounts
- Schemes for recycling of wastewater
- Scientific evaluation of the effect of dams
- Monitoring of aquatic species, including IAS in all water monitoring programmes
- Controlled dam water releases
- Enforced EIAs

5.6 Effective management of invasive species

Justification
Unintentional introduction of diseases, pests and IAS can be very costly. The extent of IAS in Botswana is not sufficiently known, and Botswana is trailing behind the other countries in the region with regards to inventories and control of IAS, and policies on the use and management of GMOs for example.

Actions to achieve goal

5.6.1 Stop government distribution of known IAS through government nurseries
5.6.2 Survey levels of Invasive Alien Species (IAS) and indigenous invasive species infestation at ecosystem level and publish updates regularly. (Ref 5.5.3 – Aquatic species and 5.8.3 – Bush encroachment)
5.6.3 Establish database on IAS, including indigenous invasive species and desirable alien organisms, and research the effects of introduction
5.6.4 Prepare an IAS strategy and policy including classification of IAS and indigenous invasive species and related measures to monitor and control invasive species, with the aim to prevent introduction and spread of IAS, while promoting the use of indigenous species (Ref 6.3)
5.6.5 Monitor import, export and movement (translocation) of genetic resources with special emphasis on IAS and indigenous invasive species and disease causing agents, and rare and endangered species and ensure effective enforcement of quarantine and phytosanitary controls
5.6.6 Produce IAS identification guides and relevant information materials for selected target groups, I.e. farmers, tourists etc
5.6.7 Put on information campaigns about IAS, especially at borders, airports etc.
5.6.8 Train customs and excise staff in basic identification of IAS, the importance of avoiding introduction of IAS, where to get assistance with identification if in doubt and generally about phytosanitary principles (Ref 4.5.2)
5.6.9 Amend legislation to tally with IAS and GMO strategy and regional standards assure that the import permit procedures for genetic material include assessment of IAS identification and prohibition (Ref. 4.3 - Legislation)
5.6.10 If necessary undertake programmes to control IAS, as per 5.6.4

Outputs/Products
- Publicly available IAS inventory and database
- IAS strategy and classification of IASs
- Records of import and export of genetic resources
- Border controls, quarantine and phytosanitary controls enforced
- IAS identification guides
- IAS Publicity campaign
- Customs staff trained in IAS management
- Legislation to support IAS strategy

5.7 Water and air pollution levels reduced to reduce biodiversity loss

Justification
Pollution can have damaging effects on ecosystem function and services provision, especially wetland ecosystems. Pollution also affects human health. The cost of pollution to society needs to be investigated and considered when setting pollution targets.

Pollution is partly due to un-educated behaviour and partly to short-term economics. A mix of economic incentives to reduce levels of pollution, standards and measures for legal enforcement and education is therefore needed to reduce pollution levels.

Actions to achieve targets

5.7.1 Study the effects and costs of pollution of biodiversity and value the biodiversity losses and include in cost analysis Ref 3.1.4 – (Environmental audit)

5.7.2 Develop, and/or refine, implement and enforce pollution standards, to include pollution of air, water and land.

5.7.3 Identify sources and root causes of pollution and implement mitigation measures to reduce pollution at source and establish pollution covenants between government and the private sector and enforce the polluter pays principle.

5.7.4 Monitor hydrological change and water quality, especially around urban centres and around industries

5.7.5 Investigate and implement wider use of integrated pest management to reduce pesticide use (Ref 3.8.6 – Awareness of farmers)

Outputs/Products

- Government briefing note on biodiversity and pollution to guide national planning
- Revised national pollution standards
- Government incentives to reduce pollution levels
- Water quality records and trends
- Reduced levels of pesticide use

5.8 Improved understanding of threats to biodiversity

Justification

The BSAP stocktaking process brought up a list of threats to biodiversity in Botswana, including fire and elephant damage. There is currently debate on the level of threat posed by the latter two and further research is needed to improve our understanding of their effects on biodiversity. The impact of HIV/AIDS on long-term biodiversity conservation also needs further investigation.

The list of threats to biodiversity is not exhaustive and new threats may emerge, while the severity of some of today's low-level threats may increase. It is therefore important to continue the monitoring of threats and their effects on biodiversity and adapt mitigation activities accordingly.

Actions to achieve targets

5.8.1 Research the effects of bushfires on different components of biodiversity and identify and implement strategies and training to minimise the negative effects of bushfires and include in fire and land management plans

5.8.2 Research the effects of large elephant populations on biodiversity and long-term elephant population trends in Botswana

5.8.3 Review existing information, and if necessary continue research into the effects and management of bush encroachment, over-grazing and over stocking on rangelands

5.8.4 Review existing information and continue investigation and research into potential and new threats to biodiversity in Botswana

Outputs/Products

- Scientific report on the relationship between bushfires and biodiversity to guide planning and resource allocation and if relevant, strategy on bushfire control
- Fire management plans
- Scientific report on the effect of elephants on biodiversity in Botswana, and if relevant strategy to minimise effects of the elephant population on biodiversity.

OBJECTIVE 6

RAISED PUBLIC AWARENESS AND APPRECIATION OF BIODIVERSITY TOGETHER WITH ACTIVE PUBLIC PARTICIPATION IN BIODIVERSITY RELATED ACTIVITIES AND DECISION-MAKING PROCESSES

WHY

This is an extremely important objective as the way we think of and value biodiversity form the foundation on which to build sustainable use and management of this natural resource. There is still a need to raise general awareness levels of the value of Botswana's biodiversity capital to society and the ecological services it provides.

Public participation in decision-making involving the use of biodiversity will encourage public support and participation and is vital to achieve sustainable solutions, be it for land use, or use of components of biodiversity.

WHAT DOES NDP 9 SAY?

"Public participation in policy formulation, implementation and decision-making is critical to sustained environmental management. Government will share and provide access to information such that every member of society may actively participate in the execution of national environmental responsibilities "(Paragraph 14.38)

Environmental economic concepts and methods will greatly assist environmental mainstreaming but at present the potential is minimally used. The intrinsic and total economic value of most natural resources is not known, and neither is the cost of environmental damage.

WHAT DOES NCS SAY

According to paragraph 3.7.6, the need for public awareness applies both to all of the issues (addressed by the NCS) and to the NCS in general.

"Public awareness about environmental issues needs to be raised significantly, so that conservation is achieved for the benefit of future as well as present generations."

Paragraph 6.4.2 further states that "through the NCS, public awareness about the importance and value of both sustainable development and conservation will be widened as will as intensified."

With regards to quality of life and access to green spaces the NCS states that "it is the intention of Government to enhance the landscapes of all main settlements through the provision of well planned, designed and managed areas of open space for public recreational use and the establishment of significantly increased numbers of well grown trees.

Strategic targets overview

6.1	Raised public awareness about the value and need to conserve Botswana's biodiversity, related indigenous knowledge and traditional
6.2	Promotion and priority given to use of indigenous species in public places and in habitat restoration programmes
6.3	Quality of life and appreciation of biodiversity improved
6.4	Enhanced participation by community, civil society, including youth in biodiversity related activities
6.5	Gender issues mainstreamed into the biodiversity planning framework to enhance participation

Strategic targets details

6.1 Raised public awareness about the value of and need to conserve Botswana's biodiversity, related indigenous knowledge and traditional practices, and relevant government policies

Justification

Ignorance on the role of biodiversity in development can lead to unsustainable and destructive use for short-term gains, which might prove expensive for society in the long-term. The best way of ensuring conservation and wise use of biodiversity is therefore to make people aware of its value, and thus empower them to make informed choices relating to use.

Indigenous knowledge and traditional practices are part of the nation's cultural heritage. The transfer of indigenous knowledge and traditional methods is slowly being eroded because of demographic change and changes in attitudes. Traditional learning and knowledge, and appreciation of cultural taboos and spiritual values are not only part of the cultural heritage but may contribute to the conservation and sustainable use of the country's biological resources.

The BSAP stocktake consultation highlighted that dissemination of government biodiversity related policies and strategies is not always efficient and this has the effect that some policies are not always clearly understood and appreciated at community level. Biodiversity awareness campaigns should therefore include information on relevant policies and strategies in an easy to understand way.

Actions to achieve targets

6.1.1	Develop and implement a national biodiversity awareness and advocacy strategy aimed at all levels of society (Ref. 11.1.3 – Specific high level BSAP awareness)
6.1.2	Continue dissemination of existing biodiversity and CBD information material and, if necessary, develop new training and information materials in appropriate languages, using a variety of media
6.1.3	Incorporate biodiversity awareness (the importance of maintaining biodiversity and related indigenous knowledge such as traditional and cultural practices, such as taboos, totems in the national curriculum at all education levels and develop appropriate teaching aids
6.1.4	Establish biodiversity/environmental information centres in each district, linking with museums and NGOs as appropriate
6.1.5	Encourage community skill transfer workshops on indigenous knowledge and traditional practices
6.1.6	Within the botanical gardens establish medicinal plant gardens to encourage further development of knowledge and skills associated with the local use of medicinal plants

Outputs/Products

- Biodiversity awareness strategy
- Training and information materials
- Revised school curricula for all levels of education to include relevant biodiversity issues
- Media broadcasts and information campaigns
- Revised curricula for all levels of education

- Community skills transfer workshops
- Medicinal plant gardens
- Improved public knowledge levels of medicinal plants and in the extension, improved family health
- Improved public understanding of government biodiversity related policies and strategies

6.1 Promotion and priority given to use of indigenous species in public places and in habi restoration programmes

Justification
The appreciation of indigenous plant species for landscaping purposes is currently limited, even though these species are often much better suited to the climate, requiring less water. Government should set an example and use and promote indigenous and drought resistant plant species in public places.

Actions to achieve targets
6.2.1 Government nurseries to focus on propagation and distribution of indigenous species wherever possible
6.2.2 Active promotion of the use of indigenous flora in habitat restoration programmes, around public buildings and Council managed areas (Ref. 2.7 - Restoration).
6.2.3 Encourage domestication, breeding and propagation of indigenous species with horticultural potential

Outputs/Products
- Increased availability of indigenous horticultural plants
- Indigenous plants cultivated in public places
- Increased number of domesticated indigenous species

6.2 Quality of life and appreciation of biodiversity enhanced through increased access to green recreational areas

Justification
Quality of life is not only related to income and poverty levels, but is also affected by the environment in which we live. Provision of green areas within and around cities and settlements will in the long-term add to the quality of life of the urban and village populations and add to the appreciation of biodiversity.

Actions to achieve targets
6.3.1 Strengthen the link between biodiversity conservation and poverty alleviation schemes (Ref 3.3.3 – Poverty alleviation)
6.3.2 Encourage development and maintenance of parks and green areas in and around urban centres and other settlements
6.3.3 Establish smaller botanical gardens in urban areas other than Gaborone, for recreation and education and link with school market gardens and urban and village vegetable plots

Outputs/Products
- Increased number of parks and recreational areas
- Local botanical gardens
- Biodiversity enhancing poverty alleviation projects

6.3 Enhance participation by civil society, including youth in biodiversity related activities

Justification
Consultative, participatory and decentralized approaches to biodiversity conservation will have the greatest impact on long-term biodiversity conservation and more clearly represent societal choice.

The BSAP stocktake brought up many concerns relating to the lack of interest in learning about indigenous knowledge and traditional methods by the younger generations. The youth are the key to the future

and it is important to involve them in biodiversity related issues if we want traditional practices and indigenous knowledge to be passed on to future generations. For the cultural heritage to survive it is therefore crucial to find means and ways of encouraging youth to participate in biodiversity related activities. There is considerable experience of biodiversity related youth projects in other parts of Africa, and Botswana with its relative prosperity and low population density is in a good position to learn from these and successfully implement similar activities in Botswana.

Actions to achieve targets

6.4.1 Review existing biodiversity programme and identify current and potential role of communities and NGOs in biodiversity conservation (Ref 3.3.1 – Diversification of CBNRM)
6.4.2 Amend and approve CBNRM policy and initiate implementation
6.4.3 Prepare and publish CBNRM manual
6.4.4 Review African experiences on programmes to encourage active youth participation in biodiversity related activities and transfer of traditional knowledge.
6.4.5 Initiate a national programme to encourage youth participation in biodiversity, including agrobiodiversity, conservation activities

Outputs/Products

7 Roles of communities and NGOs in biodiversity conservation established
8 CBNRM review report
9 CBNRM policy
10 CBNRM manual
11 National Youth/biodiversity activity scheme

6.5 Gender issues mainstreamed into the biodiversity planning framework to enhance participation

Justification

The future of biodiversity conservation depends on the active involvement of all groups of society, including women and youth. There is an increase in the number of female-headed household for whom biological resources provide livelihoods opportunities.

Actions to achieve target

6.5.1 Evaluate gender access and ownership of natural resources with regards to the current institutional and policy environment, with the aim of addressing gaps or inequalities in national policy
6.5.2 Improve women's access to credit facilities in order to utilize natural resources such as veld products and medicinal plants

Outputs/products

- Gender related statistics on resource utilisation
- Gender sensitive credit schemes

OBJECTIVE 7

FAIR ACCESS TO BIOLOGICAL RESOURCES AND EQUITABLE SHARING OF BENEFITS ARISING FROM THE USE OF BIOLOGICAL RESOURCES

WHY

Fair access to biological resources and equitable sharing of benefits deriving there from is one of the three key components of the CBD. The BSAP stocktake has highlighted the gaps in existing legislation with regards to the right of access to biodiversity resources, and the need to strengthen import and export regulations and enforcement in order to encourage use of biodiversity components and to discourage bio-piracy and un-equitable sharing of benefits.

There is an urgent need for a specific Access and Benefit Sharing (ABS) strategy, which will address actual access to resources as well as to related indigenous knowledge and property rights. The strategy should also identify means of encouraging fair benefit distribution. The ABS strategy would subsequently need to be supported by appropriate legislation.

One important concept to consider is to link the right to access to resources with the responsibility of sustainably using and monitoring of the same resource.

WHAT DOES NDP 9 SAY?

NDP 9 does not specifically address access to genetic resources and means of benefit sharing, but in Paragraph 14.57 it mentions the need to "consolidate CBNRM during NDP9 which would require accelerated implementation of the CBNRM Policy and legislation."

NDP 9 also addresses the need for an overarching Environmental Management Act (Paragraph 14.48). This Act should include specific legislation to guide access to genetic resources and it also needs to address benefit-sharing issues.

Paragraph 14.42 recognises that "Comparative advantages related to the environment are associated with the abundance of solar power, some veld products, wildlife, water conservation, livestock and minerals."

WHAT DOES NCS SAY

One of the expected benefits of the NCS is greater social and community benefits (Paragraph 6.4.1). although access and benefit sharing are not addressed *per se.*

An important part of the NCSs however is to encourage economic diversification and the strategy draws attention to the many diversification opportunities involving biodiversity resources. To take advantage of these opportunities a system to regulate access and benefit sharing is essential.

Strategic targets overview

7.1	Fair access to biological resources and benefit sharing
7.2	Access to biodiversity linked to responsibility for sustainable management
7.3	Legal protection of innovations associated with genetic resources, local knowledge and skills improved

Strategic targets details

7.1 Fair access to biological resources and benefit sharing

Justification

Societal support of biodiversity conservation is based on equitable access and appropriate benefit streams. Access and benefit sharing strategies and subsequent implementation should serve to ensure that benefits from use of biodiversity are shared equitably.

Actions to achieve targets

7.1.1 Develop Access and Benefit Sharing (ABS) strategy, policy and mechanisms for distribution of benefits and include international transfer of genetic resources and related knowledge. While waiting for the ABS strategy ensure that all genetic materials sent out of the country are accompanied by relevant Memoranda of Understanding (MOUs) and Material Transfer Agreements (MTA)

7.1.2 Establish guidelines for access to biodiversity, benefit sharing and prospecting

7.1.3 Provide legislative and regulatory framework on access to biodiversity, taking regional experiences into consideration

7.1.4 Ensure that all transfers of genetic resources are in line with the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture and other applicable international and regional agreements and standards

Outputs/Products

12 ABS strategy and policy
13 ABS implementing guidelines
14 Legislation addressing ABS
15 Controlled transfer of genetic resources

7.2 Access to biodiversity linked to responsibility for sustainable management

Justification

Rehabilitation and restoration of ecosystems and biodiversity is expensive. Whereas the profits of developments and industry normally benefit individuals or companies, the environmental cost are often borne by society. Users of biodiversity should therefore be made to take appropriate responsibility for its sustainable use and for monitoring of the resource.

Actions to achieve targets

7.2.1 Ensure access to resources and responsibility for sustainable development is covered in Veldproduct Policy (to be developed - Ref. 3.9.1)

7.2.2 Active follow-up on EIAs to ensure that mitigation activities are carried out satisfactorily (Ref 5.4.3 enforcement)

7.2.3 Introduce resource access with responsibility for monitoring of resources (Ref. 1.3.7 – User based monitoring)

Outputs/products

- Access issues addressed in Veldproduct policy
- Mechanisms for enforcing implementation of EIA mitigation activities
- Monitoring responsibilities included in conditions for resource permits and quota allocations

7.3 Improved legal protection of innovations associated with genetic resources, indigenous knowledge and skills

Justification

Indigenous knowledge is currently not properly covered by Intellectual Property Rights (IPR) legislation. There are some recent examples in the region of patenting based on Indigenous Knowledge made by companies and researchers. In order to ensure fair and equitable sharing of benefits resulting from the use of Indigenous Knowledge it is crucial that IPR legislation includes provisions for Indigenous Knowledge.

Also refer to 4.3, Legal Framework for biodiversity.

Actions to achieve targets

7.3.1 Develop a blueprint on protection of intellectual property rights including indigenous knowledge adopting OAU model law on IPR and Indigenous Knowledge (Ref 7.1.3 – Access legislation)
7.3.2 Develop a national policy framework on Indigenous Knowledge with special provision for traditional medicine research and use (Ref 10.5 – regional trade)
7.3.3 Make Access and Benefit Sharing Agreement guidelines and templates easily available and promote joint ventures which are beneficial to the country and individuals
7.3.4 Document trade data on biological resources and their products to establish trade flows
7.3.5 Adopt OAU model law on IPR and Indigenous knowledge

Outputs/Products

16 IPR legislation covering biodiversity and indigenous knowledge
17 Policy frame work on Indigenous knowledge and traditional medicine
18 ABS guidelines and agreement templates
19 Trade data on biological resources and related products
20 OAU model law adopted

OBJECTIVE 8

SAFE INDUSTRIAL AND TECHNOLOGICAL DEVELOPMENT BASED ON NATIONAL BIODIVERSITY RESOURCES FOR FUTURE PROSPERITY

WHY

Biotechnology and biosafety are relatively new concepts to Botswana and the world. Although many of the new technologies offer great potentials for humankind, there is still a lack of reliable scientific data on biotechnology issues such as the long-term effects, positive or negative, of introducing genetically modified organisms into natural systems. Botswana has so far .applied the so called precautionary principle when dealing with biotechnology and biosafety. New technologies based on genetic resources however offer scope for economic diversification through research and development and participation in technical joint ventures.

The BSAP stocktake report has identified a need for a structured approach to biotechnology and related biosafety issues, which takes into consideration the requirements of the CBD Cartagena protocol. Ministry of Agriculture is already in the process of developing a national biosafety framework and protocol, which links in with this strategy.

The BSAP stocktake has also highlighted the need to raise public awareness about biotechnological opportunities and risks.

WHAT DOES NDP 9 SAY?

"The role of agricultural research is to develop appropriate technologies that reduce production constraints and increase productivity of crop and livestock enterprises while conserving the environment."

Paragraph 10.110 lists one of these strategies as "initiate biotechnology research that has potential for higher production and productivity and the safe use of biotechnology."

WHAT DOES NCS SAY

The NCS was published in 1990 and there has been a lot of progress and development in the field of biotechnology and biosafety since.

The NCS does not address biotechnology or biosafety issues, but talks about the need for economic diversification, including development of new markets for veldproducts**.**

Strategic targets overview

8.1	Increased capacity in dealing with biotechnology and biosafety
8.2	Safe use of biotechnologies ensured in Botswana
8.3	Raised biosafety and biotechnology awareness
8.4	Bio-prospecting and citizen-based innovation encouraged through creation of an enabling environment

Strategic targets details

8.1 Increased capacity in dealing with biotechnology and biosafety

Justification
Current biotechnology capacity is currently limited to a few individuals and institutions involved in plant and animal breeding, Artificial Insemination (AI), and vaccine production. It is very important to maintain high safety standards when dealing with biotechnology and genetically manipulated organisms. Biosafety issues are likely to increase as the new technologies develop, and national capacity to cope with future demands will be needed.

Actions to achieve targets

8.1.1	Develop institutional structures, ensuring regional harmonization, which will assure safe use of biotechnology in Botswana, including physical containment facilities, and institutionalising regulation approach, i.e. implementation of the Biosafety Framework
8.1.2	Assess government training needs for implementation of the National Biosafety Framework and develop strategy to address needs assessment results
8.1.3	Expand present information technology use in Government institutions to assure the regulatory personnel have access to the latest information on emerging biotechnology use and risks
8.1.4	Develop a biosafety clearing house with up to date biosafety information relevant to the Botswana situation and make it available on the World Wide Web
8.1.5	Estimate and develop capacity in biotechnology related fields, including legal issues, and implement training programme accordingly
8.1.6	Establish Biotechnology and Biosafety Expert Reference Group to provide technical backstopping for regulatory staff in Risk Analysis and Management activities, with membership reviewed biannually and adjusted as necessary
8.1.7	Carry out training programmes on biosafety for Customs officials, the police and other stakeholders

Outputs/Products
- Appropriate biosafety infrastructure
- Biosafety and biotechnology training programme
- Improved access to internet facilities regarding biosafety and biotechnology
- Biosafety Clearing House Mechanism
- Biotechnology related expertise available in country
- Biotechnology and biosafety expert reference group
- Biosafety awareness among law enforcement staff

8.2 Safe use of biotechnologies ensured in Botswana

Justification
Botswana has ratified and is committed to the *Cartagena Protocol on Biosafety to the CBD*. The levels of awareness of modern biotechnology and the safety of the use and handling of products of modern biotechnology are generally quite low. Ensuring safety while dealing with biotechnology, both established

technologies and modern biotechnology, is essential as accidents involving biotechnology could have serious consequences.

Biotechnology is a reality of the future and it is important to have procedures, regulations and suitable expertise in place for existing biotechnologies such as vaccine production and breeding, and for when requests to use modern biotechnological processes and products start appearing. Comprehensive legislation and guidelines are currently missing, but Government has already initiated the process of regulating the use of biotechnology through the development of a National Biosafety Framework, coordinated by the Ministry of Agriculture. Regional harmonization of legislation and standards, especially concerning import/export and movement are essential.

Actions to achieve targets

8.2.1 Finalise and implement biosafety framework
8.2.2 Develop and adopt the policy and legal instruments to support the biosafety framework
8.2.3 Develop and implement technical guidelines and procedures to control handling and the transboundary movement of genetically modified organisms (GMOs)and their products

Outputs/Products

- Biosafety Framework
- GMO guidelines and procedures for handling, use and movement
- Legal policy and framework covering biotechnology and biosafety

8.3 Raised biosafety and biotechnology awareness

Justification

The limited public awareness of biotechnology and related safety issues is currently not a major problem as exposure to biotechnology activities and products is currently fairly limited. With an expected increase in the use of biotechnologies in the future it is important that the awareness level is raised to prevent misuse and to encourage development of the opportunities provided by the new technologies.

Actions to achieve targets

8.3.1 Develop public and political awareness programmes on biosafety and biotechnology for various sectors
8.3.2 Integrate biosafety and biotechnology studies into curricula both at secondary and tertiary centres of learning
8.3.3 Assess national training needs in the field of biotechnology and biosafety and establish specialist capacity

Outputs/Products

- Biosafety information campaign
- Revised curricula at secondary and tertiary levels
- Biosafety and biotechnology training needs assessed

8.4 Bio prospecting and citizen based innovation encouraged through the creation of an enabling environment

Justification

Biotechnology, biosafety and bio-prospecting are closely related. Biotechnology based innovations based on new technologies are a potential source of income and livelihoods, which should be encouraged. While it is important to protect biodiversity, it is important not to limit *bona fide* research and development activities. Biotechnology and access and benefit sharing partnerships can provide opportunities, which will contribute to the future prosperity of the nation.

In addition to the technologies and inventions themselves, sound marketing skills and an enabling business environment are required for successful implementation (Ref Objective 4).

Actions to achieve aim

8.4.1 Improve and encourage national and local capacity to participate and benefit from bio trade by encouraging the formation of user groups and by providing communities with appropriate training

8.4.2 Ensure that new legal framework addressing genetic resources, while providing the necessary safety regulatory framework does not stifle *bona fide* research and bio prospecting enterprises unnecessarily. This can be achieved through extensive consultation with all concerned groups in connection with updating of the legal framework

8.4.3 Carry out feasibility studies and market surveys for biodiversity and biotechnology based products and production and link with investment opportunities

8.4.4 Promote value added research and sustainable trade in genetic resources through education campaigns and financial incentives

8.4.5 Ensure that the standards, regulatory processes and legal framework are compatible with regional and international biosafety regulations

Outputs/Products

- Biotrade user groups
- Biodiversity legislation consultation process
- Regionally and internationally compatible standards, policies and laws
- Bio-prospecting feasibility studies and market data
- Research reports addressing value added research and new products
- New Bio-prospecting companies and partnerships

OBJECTIVE 9

IMPROVED AVAILABILITY AND ACCESS TO BIODIVERSITY DATA AND INFORMATION, AND PROMOTION OF EXCHANGE OF INFORMATION

WHY

Information and data are essential components of responsible and informed decision making. The BSAP Stocktake has identified a gap in the availability of certain biodiversity data, the need to facilitate the access and use of existing biodiversity data and to generate new data (See Objective 2).

The proposed model for streamlining the access to national biodiversity data include a computerised biodiversity Clearing House Mechanism (CHM) and the appointment of national focal-point institutions responsible for the recording, safe-keeping and maintaining records and data related to specific groups of organisms. The information of key national biodiversity data should be made available from these respective focal institutions or through the CHM for those who have access to the Internet. The biodiversity Clearing House Mechanism is also a requirement under the CBD.

WHAT DOES NDP 9 SAY?

NDP9 does not directly address the issue of improved availability of biodiversity data, but access to key inventories of biodiversity, and information on trends etc. provide the basis planning of any sector related to or based on the use of natural resources.

However, Para 14.49 states the "Databases required for national communications will be shared and jointly maintained."

WHAT DOES NCS SAY

Para 2.1.2 emphasises the importance of access to reliable and up-to-date information about the quality of the country's natural resources as a basis for government decisions.

Strategic targets overview

9.1	National standards established and disseminated to relevant groups for biodiversity data collection, including metadata
9.2	Key inventories computerised and meta data established
9.3	Easy access to environmental, biodiversity, social and economic data
9.4	Botswana biodiversity research data safe-guarded

Strategic targets details

9.1 National standards established and disseminated to relevant groups for biodiversity data collection, including for metadata

Justification
Data standards for collecting of biodiversity data are currently not available. Set standards for data collection will contribute to the usefulness and compatibility of data sets and facilitate analysis of data. The aim is that all projects collecting biodiversity data follow the data standards and data forms, if feasible, so that collected data can be easily incorporated into national data sets. Data standards should be applied to a few key fields.

Actions to achieve targets to
9.1.1 Establish national data collection and meta-data standards, that are regionally compatible and comply with accepted international standards, and based on standards design and produce data collection forms (Ref 1.1.2)

Outputs/Products
- Set of biodiversity data standards
- Biodiversity data collecting forms for various types of data

9.2 Key inventories computerised and meta data established

Justification
Computerisation of key inventories and national datasets will improve the usefulness of these inventories and encourage the use of biodiversity data.

Records of metadata will facilitate data searches and identification of existing data, and thereby improve data efficiency.

Actions to achieve targets
9.2.1 Computerise selected national inventories to be included in Biodiversity CHM (Ref 9.3.2)
9.2.2 Establish institutional responsibilities for maintenance of data and databases
9.2.3 Establish metadata guidelines and disseminated information and data forms to data collectors
9.3.4 Metadata collected for all national biodiversity datasets and included in CHM (Ref 9.3.2 - CHM)

Outputs/Products
- Up to date digital national inventories
- Data management responsibilities established
- Metadata guidelines
- Searchable metadata part of biodiversity CHM services

9.3 Easy access to environmental, biodiversity, social and economic data

Justification
Easy access to data will encourage the use of this data, and thus contribute to incorporating biodiversity concerns in planning and decision-making. It will also contribute to avoid duplication of data collecting efforts. Improved data availability will be cost effective as it will lead to better use of the data and hopefully limit duplication of data collecting efforts. Grey literature is often difficult to locate and a database, linked with a reference library, of all types of biodiversity literature would help prevent the disappearance of this type of literature.

Clear mandates and responsibilities will increase efficiency in data collecting and maintenance of data records and will greatly improve access to biodiversity information.

Actions to achieve targets
9.3.1 Link biodiversity focal point institutions with the responsibility for hosting relevant data collections.
9.3.2 Establish biodiversity CHM in accordance with recommendations made by the CHM working group, and acquire the necessary hardware and software
9.3.3 Establish links between national data sets and the CHM through agreements with the data provider.
9.3.4 Establish a database of literature on biodiversity including "grey literature" and with keywords to facilitate searches in NCSA.
9.3.5 Publish national checklists for all biodiversity key groups, including Red Data Lists(Ref 2.4.1 - RDL)
9.3.6 Establish a biodiversity website .

Outputs
- Data provision agreements
- Databanks in focal institutions
- Up to date Biodiversity CHM
- Up do date biodiversity literature database in NCSA
- Updated and published national checklists
- Biodiversity website.

9.4 Botswana biodiversity research data safe-guarded

Justification
Loss of research data and results is a waste of resources. It should be ensured that research data and results emanating from biodiversity research activities within Botswana are available in country, for the data itself, and as a record of what research activities have taken place, in order to avoid duplication of efforts. The process of granting of research permits must be transparent, fair and efficient in order to stimulate beneficial research activities and to be cost effective. Records of past and present research activities will also help to guide future research initiatives.

Actions to achieve targets
9.4.1 Collect research data and reports for which permits have been issued (Ref 1.3.1 – Allocation of research permits)
9.4.2 Establish depository for biodiversity research data and reports
9.4.3 Make information on ongoing biodiversity research projects available on CHM

Outputs
- Research data available in country
- Updated list of past and present biodiversity research projects on CHM
- Depository for biodiversity research data

OBJECTIVE 10

RECOGNITION OF BOTSWANA'S AND THE SOUTHERN AFRICAN REGION'S ROLES WITH REGARDS TO BIODIVERSITY

WHY

National biodiversity resources form part of the global biodiversity heritage. For example, there are some endemic plant and reptiles in Botswana, which are not found anywhere else in the world, and if these species go extinct, the world has lost another species.

As a signatory to the CBD Botswana is committed to actively contribute to the conservation and sustainable use of its resources for the global good, and the CBD encourages regional and global collaboration.

Many of Botswana's ecosystems and biodiversity resources such as wildlife span and cross national borders. This has been recognized and addressed through various Transfrontier parks initiative. Regional collaboration, cooperation and consistency are also important when setting standards and developing legal policy obligations, to increase markets and for sharing resources and thus reduce costs. For example, microbiology and biochemistry research is highly specialised and requires sophisticated and expensive equipment and highly trained expertise. Rather than each country building up its on capacity, it would be economically beneficial to share these costs between countries in the region. Taxonomic research is another example of a field where regional collaboration and sharing of resources is useful. And to efficiently conserve biodiversity in the region it is important that access regulations (to wild medicinal plants for example) and management standards (including biosafety and management of IAS) are harmonised.

WHAT DOES NDP 9 SAY?

Paragraph 14.22 states that "Environmental issues often cut across international boundaries and their solution calls for global action. Multilateral Environmental Agreements (MEAs) are one way in which the international community deals with issues of environment.

Paragraph 14.49 adds that "national capacity to actively participate in Conference of Parties and international negotiations will be strengthened and public awareness about MEAs will be intensified during NDP 9**."**

WHAT DOES NCS SAY

Paragraph 2.6.4 states that "participation by Botswana in international agreements and conventions is one way which external forces, potentially harmful to the environment, can be countered. Through membership of SADC and as a signatory of both the CITES and the African Convention on the Conservation of Mature and Natural Resources, Botswana is better placed to meet its environmental challenges"

Strategic targets overview

Strategic targets details

10.1	Relevant biodiversity related agreements and protocols continually reviewed and signed if appropriate
10.2	Compliance with and efficient implementation of relevant biodiversity related conventions, agreements and treaties
10.3	Regional and transboundary collaborations enhanced (expertise, markets, resources) and active participation in regional biodiversity networking programmes
10.4	Establishment of Botswana at the forefront of biodiversity management and conservation in the region
10.5	Pro-active role in globalisation including bio trade and biotechnology

10.1 Active participation in international biodiversity meetings and relevant biodiversity related agreements and protocols continually reviewed and signed if appropriate

Justification
Botswana has not signed or ratified the African Eurasian Water bird Agreement, the Convention of the Conservation of Migratory Species of Wild Animals or the African Convention on the Conservation of Nature and Natural Resources. To create and maintain a regional and international front position when it comes to biodiversity it is important to ensure that relevant agreements have been signed and are being adhered to.

Active participation in international meetings requires well-prepared delegations. As legal issues are featuring stronger at international levels it is important to strengthen national delegations with environmental/Access and Benefit Sharing (ABS) legal expertise as well as relevant technical expertise. In this respect, funding is a key constraint, especially for participants representing Civil Society. However, with limited funding available participation at meetings need to be prioritised to ensure that key meetings are well attended.

Actions to achieve targets

10.1.1 GoB participating actively in key conventions, such as CBD, UNCCD and CITES
10.1.2 Signing of relevant regional and international agreements
10.1.3 Develop national consensus ahead of major meetings through thematic expert groups, and public consultation as appropriate
10.1.4 Establish funding mechanisms for technical expertise to attend important biodiversity meetings
10.1.5 Strengthen national human capacity in environmental law and encourage representation by environmental law experts in government delegations to international meetings

Outputs/Products

- Signed agreements
- Thematic expert groups
- Technical and legal expertise represented on Government delegations to international biodiversity related meetings, and broad-based national agenda established before meetings.

10.2 Compliance with and efficient implementation of relevant biodiversity related conventions, agreements and treaties

Justification
To maintain national integrity and credibility it is important to comply with international commitments and responsibilities. International obligations and commitments are not always widely known, outside of the focal institution and implementation is therefore sometimes limited and un-coordinated. Many biodiversity related agreements are crosscutting in nature and require input from several institutions and stakeholders, which requires coordination.

Actions to achieve target
- 10.2.1 Design and implement a system for monitoring the implementation of international conventions and agreements related to biodiversity, including regular review of progress
- 10.2.2 Improve mechanisms for effective coordination of commitments and activities related to international agreements, including established lines of communication, to avoid duplication and finding common grounds to make implementation more effective
- 10.2.3 Periodically review all international biodiversity related commitments signed by GoB and assess implementation progress

Outputs/products
- Monitoring and evaluation system for all signed conventions and obligations relating to biodiversity
- Coordinating mechanisms for biodiversity related conventions and obligations
- Implementation status reports

10.3 Regional and transboundary collaborations enhanced (expertise, markets, resources, legislation, enforcement) and active participation in regional biodiversity networking programmes

Justification
Biodiversity resources are often transboundary in nature. Economic and resource efficiency and strength can be achieved through regional collaboration, e.g. biosystematics, environmental early warning, and marketing of veldproducts. Regional cooperation is also required for effective management and conservation of biodiversity resources, especially along borders and with regards to river basins. It is important that national legislation frameworks regarding the movement, import and export of genetic resources are compatible and that enforcement mechanisms are in place to prevent misuse.

Actions required to achieve target
- 10.3.1 Support, as appropriate, the development of bilateral or multilateral agreements and harmonization of policies and legislation within the SADC region on conservation and use of shared or migratory natural resources
- 10.3.2 Work towards the establishment of regional centres of excellence for micro organism and lesser-known organisms research and expertise (Ref 4.4.3 – National Centres of excellence)
- 10.3.3 Strengthen regional cooperation in the area of climate monitoring, drought detection/coping and natural disasters (Ref 5.1.2 – National Early Warning Programmes)
- 10.3.4 Strengthen regional cooperation in the area of natural resource management, including migratory species, river basin planning, transboundary parks
- 10.3.5 Strengthen regional cooperation in the area of biosafety, IAS and phytosanitary controls
- 10.3.6 Build and maintain partnerships of biodiversity conservation and environmental management within SADC to promote sharing of information, best practices and expertise in biodiversity management
- 10.3.7 Set up regional database of biodiversity expertise and training institutions
- 10.3.8 Adopt regional BSAP

Outputs/Products
- Regional agreements on biodiversity conservation and use of shared and migratory resources

- Regional centres of excellence for biodiversity research identified
- Regional agreements on climate monitoring and prevention, preparedness and reaction to natural disasters
- Enforcement of rules pertaining to the movement of genetic resources
- Guidelines for natural resource management, including regional best practices
- Regional training and biodiversity expertise database
- Regional BSAP commitments adopted and implemented

10.4 Establishment of Botswana at the forefront of biodiversity management and conservation in the region

Justification
Botswana should strive to become a regional leader in the conservation field, which means the country would be in a position to lead developments in the field of biodiversity, rather than having to catch up.

Actions to achieve target
10.4.1 Adopt the highest standards of biodiversity management
10.4.2 Provide direction and leadership in biodiversity management in the region

Outputs/products
- Highest biodiversity conservation and use standards in the region
- Active participation in regional biodiversity initiatives

10.5 Pro-active role in globalisation including bio trade and biotechnology

Justification
Globalisation has potential to dramatically affect Africa, and Botswana would benefit from playing a pro-active rather than reactive role. There is currently little biotechnology development taking place in Botswana and international bio trade is limited, but with relatively unexplored genetic resources and a large market for natural and traditional medicines in the region, there is potential for expansion.

Actions to achieve target
10.5.1 Encourage ABS partnerships through an enabling environment
10.5.2 Participate actively in international biotechnology and biotrade initiatives

Outputs/Products
- ABS joint ventures and partnerships in biotrade
- Signed international trade agreements which are beneficial to Botswana
- Environmental law expertise

OBJECTIVE 11

IMPLEMENTATION OF THIS BIODIVERSITY STRATEGY AND ACTION PLAN

WHY

It is important for the future health of Botswana's biodiversity that the Biodiversity and Strategy Plan in implemented together with the National Conservation Strategy without delay.

A critical prerequisite for successful implementation is to achieve political and high-level support and will to implement the strategy. This will help to drive the process.
Public support and acceptance are also of key importance.

In addition, efficient coordination is a key requirement. It is proposed that a BSAP implementation office be established with the Ministry of Environment, Wildlife and Tourism, with the specific task of coordinating activities. The first step will be to distribute the BSAP to all key actors and to inform them of their responsibilities and establish communication links. The second step is regular monitoring of activities to ensure that activities are on track. Thirdly, implementation of the BSAP needs to be evaluated to determine it the goals have been achieved. Another important task for the unit would be to make sure that BSAP activities are covered by the NDP mid-term review and will be included in the next NDP planning process.

The BSAP coordinating office would also be responsible for the biodiversity Clearing House Mechanism and for maintaining links with the State of the Environment reporting.

For maximum effect and to facilitate district implementation, district BSAPs should be developed based on the national BSAP.

WHAT DOES NDP 9 SAY?

Paragraph 14.52 confirms "The completion of the development of a national Biodiversity Action Plan will be followed by its implementation."

"The implementation of the recommendations will require additional funding as well as human resources."

WHAT DOES NCS SAY

The NCS predates the BSAP and therefore does not address its implementation. However, it contains a commitment to implementation of the NCS and states in Paragraph 8.2.4 that "The Government is committed to ensuring the success of the NCS and specifically the achievement of its goals: "*sustainable development through and with the conservation of natural resources.*" As the BSAP builds on the NCS this commitment is taken to extend to the BSAP.

Strategic targets overview

11.1	Political will and coherent government approach to implementation of BSAP established
11.2	Institutional resources for the coordination of the implementation of the BSAP made available and BSAP coordinating unit established
11.3	Components of BSAP streamlined into national development planning and budgeting processes
11.4	Sustainable financial provisions for implementation of the BSAP ensured

Strategic targets details

11.1 Political will and coherent government approach to implementation of BSAP established

Justification
Political will is essential for successful implementation of the BSAP. Political will to make sure the BSAP is implemented is closely linked to awareness of the value of biodiversity and the consequences, economic and biological, of inertia. Targeted awareness and Public Relations campaigns are tools to raise awareness among politicians and other decision-makers.

Actions to achieve target
- 11.1.1 Preparation of Government white paper on biodiversity based on BSAP
- 11.1.2 Prepare and hold high level (directors' level and up) BSAP seminar and technical level seminars for line ministries
- 11.1.3 Design a BSAP awareness raising campaign aimed at senior management and at political level to continue building support for implementation of BSAP
- 11.1.4 Publicize the BSAP through public relations (PR) campaign in local languages, in line with Vision 2016 and the Education Policy.

Outputs/Products
- Biodiversity White paper
- High level biodiversity seminar
- Technical level BSAP seminars
- Biodiversity information campaign outlines and materials

11.2 Institutional capacity for the coordination of the implementation of the BSAP enhanced

Justification
Inadequate national implementing capacity will weaken the impact of the BSAP and thus long term development. As biodiversity conservation and management are cross cutting in nature, it is essential to have strong coordination of the strategy for successful implementation. The NCSA has been given the specific mandate for implementing the National Conservation Strategy, under which the BSAP falls. However, to ensure implementation of the BSAP a specific unit with special responsibility for coordinating, implementing and monitoring progress of the BSAP is essential.

Actions to achieve target
- 11.2.1 Establish 5 year budget for BSAP implementing unit and secure funding
- 11.2.2 Make BSAP coordination and implementation office operational by providing offices and appointing 1 project manager + 1 assistant
- 11.2.3 Prepare ToRs and workplan for BSAP coordination unit and define roles and responsibilities for effective implementation

11.2.4 When the national BSAP unit is established , assign and allocate officers at district and sub-district levels for the implementation of the BSAP

Outputs/Products:

- 5 year budget
- BSAP funding proposals
- Committed funding
- Operational BSAP implementing unit
- ToR and workplan for BSAP implementing unit
- District and sub-district BSAP implementation officers assigned

11.3 Components of BSAP streamlined into national and district development planning and budgeting processes

Justification

Implementation of the BSAP will only happen if it is included in the national and district planning and budgeting processes. While policy and legal frameworks will need to be agreed at the national level, many of the BSAP activities will be implemented at district level. To encourage and facilitate implementation it is therefore important to break the BSAP down into manageable units, i.e. to sort activities according to key actors and inform these key actors or "drivers of the activities" of what is expected from their respective sectors/ministries or organisations. The responsibility for ensuring that BSAP activities are incorporated into national and district development plans (mid-term review for NDP 9 and preparations for NDP10) will lie with the respective ministry.

Actions to achieve target

11.3.1 BSAP coordinating unit to sort BSAP activities according to key ministries or key players, and national and district implementation levels

11.3.2 Distribute BSAP to all lead agencies and key partners and to inform them of their responsibilities and establish communication links

11.3.3 Monitor implementation of the national BSAP on a yearly basis, evaluate the results and make adjustments as necessary.

11.3.4 Update BSAP for the next NDP period, taking District BSAPs into consideration (Ref – 2.1 District BSAPs)

Outputs/Products

- BSAP and outline of responsibilities distributed to all ministries, departments and institutions involved in its implementation
- Annual monitoring reports and an evaluation report after 5 years
- District BSAP guidelines
- District BSAPs
- Mechanisms for integration of BSAP into national planning
- Updated BSAP for 2008-2013

11.4 Sustainable financial provisions for implementation of the BSAP and biodiversity programmes ensured

Justification

Financial resources are needed for the implementation of the BSAP. Each ministry will be responsible for ensuring that BSAP activities are included in the national and development planning processes to secure funding for implementation by government institutions. The BSAP should also be used to guide donor funding.

Actions to achieve target

11.4.1 Review existing financing mechanisms and prepare funding strategy for BSAP related project, including donor funding proposals

11.4.2 Strengthen existing biodiversity financing mechanisms if necessary, communicate national

biodiversity and environment priorities to external donors, and proactively seek funding for BSAP projects

11.4.3 Update and revise estimates of required financing

11.4.4 Develop guidelines for biodiversity joint ventures including the private sector and NGOs

Outputs/Products

- Funding strategy
- Detailed ministerial BSAP budgets
- Government biodiversity priorities and funding proposals submitted to donors
- Finance estimate
- Joint venture guidelines

5 THE ACTION PLAN

The Biodiversity Strategy Action Plan is the result of a fairly long process, starting with the BSAP Stocktake report and followed by the BSAP Outline report, and subsequently the Biodiversity Strategy itself. The Action Plan has been compiled based on inputs from the national consultation process, the BSAP consultancy team the BSAP Steering Committee and the National Biodiversity Authority.

The Action Plan is a large scale planning tool providing indications of actors, timeframes and cost implications of the proposed activities. The Action Plan contains the following columns or fields:

Heading	**Comment**
▪ Number of Strategic aim	Reference number
▪ Strategic aim	Description of strategic aim. The expected outputs are listed in Chapter 4
▪ Number of activity	Reference number
▪ Participating institutions	Institutions suggested in implementation of the action. Where appropriate, specific national NGOs have been identified, but in other cases the appropriate NGO will need to be identified. Relevant ministries, and wherever possible departments have been identified and in places; specific departments. In most cases the involvement of Civil Society, including NGOs, CBOs and the private sector, should be considered. Institutions marked in bold are suggested lead institution with key responsibility to drive the action. Funding for NGOs is today a major problem and the future of some may therefore be questionable, which is why the chosen lead institution is usually a government institution, as these are considered more stable.
▪ Time frame	Timeframe for implementation of activity. In most cases limited to the end of 2008 to coincide with NDP9, but a few actions have been given a 10 year limit.
▪ Cost	Indicative cost estimates based on manpower and infrastructure requirements.
▪ Sources of verification	Sources to indicate if an activity has been successfully completed, to be used in evaluation of the BSAP
▪ Priority	Priority of action on a scale from 1-3 where 1 indicates highest priority. The prioritisation also reflects the sequence of activities to some extent.

Implementation of the BSAP is closely linked to National Development Plan 9 (NDP). Many of the activities are however currently not directly referred to or included in NDP 9, and it is therefore extremely important that the relevant ministries, championed by key actors and institutions together with the Ministry of the Environment in general work towards incorporating them during annual and mid term reviews of the National Development Plan.

The Strategy and Action Plan should also work as a guiding document for donor funds.

Abbreviations used in the Action Plan

ABS	Access and Benefit Sharing
ACG	Accountant General
AGC	Attorney General's Chambers
ARB	Agricultural Resources Board
BAMP	Botswana Agricultural Marketing Board
BLB	BirdLife Botswana
BCA	Botswana College of Agriculture
BDF	Botswana Defence Force
BEDIA	Botswana Export Development and Investment Agency
BIDPA	Botswana Institutive for Development Policy Analysis
BMC	Botswana Meat Commission
BNTSC	Botswana National Tree Seed Centre
BOBS	Botswana Bureau of Standards
BOCCIM	Botswana Confederation of Commerce Industry and Manpower
BOCOBONET	Botswana Community Based Organisation Network
BOCONGO	Botswana Council of Non Governmental Organisation
BOTEC	Botswana Technology Centre
BRIMP	Botswana Rangeland Inventory and Monitoring Project
CBD	Convention on Biological Diversity
CBO	Community Based Organisation
CEDA	Citizen Entrepreneur Development Agency
CHM	Clearing House Mechanism
CI	Conservation International
Com	Communities
CPR	Common Property Resources
CSO	Central Statistics Office
DA	District Administration
DAPC	Division of Air Pollution Control
DAR	Department of Agricultural Research
DCE	Department of Customs and Excise
DCO	District Commissioner's office
DDC	District Development Committee
DFREB	Department of Forestry, Range Ecology and beekeeping
DIT	Department of Information and Technology
DLUPU	District Land Use Planning Unit
DMC	Disaster Management Committee
DMS	Department of Meteorological Services
DNLS	Department of National Library Services
DoF	Division of Fisheries
DOL	Department of Lands
DoT	Department of Tourism
DSM	Department of Surveying and Mapping
DSWM	Department of Sanitation and Waste Management
DTRP	Department of Town and Regional Planning
DWA	Department of Water Affairs
DWNP	Department of Wildlife and National Parks
DYA	Division of Youth Affairs
DYC	Department of Youth and Culture
FAB	Forestry Association of Botswana
FTRS	Food Technology and Research Services
GCB	Government Computer Bureau
GMO	Genetically Modified Organisms
GOB	Government of Botswana
HATAB	Hospitality and Tourism Association of Botswana
HOC	House of Chiefs
HOORC	Harry Oppenheimer Okavango Research Centre

IAS	Invasive Alien Species
IK	Indigenous Knowledge
IPA	Important Plant Areas
IPR	Intellectual Property Rights
IUCN	International Union for the Conservation of Nature
IVP	Indigenous Vegetation Project
KCS	Kalahari Conservation Society
KDT	Kuru Development Trust
KY	Kgetsi ya Tsie
LB	Landboard
MCST	Ministry of Communications, Science and Technology
MEWT	Ministry of Environment, Wildlife and Tourism
MFAIC	Ministry of Foreign Affairs and International Cooperation
MFDP	Ministry of Finance and Developing Planning
MLG	Ministry of Local Government
MLH	Ministry of Lands and Housing
MLHA	Ministry of Labour and Home Affairs
MMEWA	Ministry of Mineral, Energy and Water Affairs
MOA	Ministry of Agriculture
MOE	Ministry of Education
MOH	Ministry of Health
MSP	Ministry of the State President
MTI	Ministry of Trade and Industry
MWT	Ministry of Works and Transport
NACA	National AIDS Coordinating Agency
NARS	National Archives and Records Services
NBSC	National Biosafety Committee
NBSF	National Biosafety Framework
NA	Not Applicable
NCS	National Conservation Strategy
NCSA	National Conservation Strategy Coordinating Agency
NDMO	National Disaster Management Office
NGO	Non Governmental Organisation
NHBG	National Herbarium and Botanical Gardens
NMAG	National Museum and Art Gallery
OAU	Organisation of African Union
ODMP	Okavango Delta Management Plan
OOP	Office of the President
OPWT	Okavango Peoples Wildlife Trust
PC	Permaculture Botswana
PR	Public Relations
PS	Private Sector
RD	Red Data
RDC	Regional Development Commission
RDL	Red Data List
SADC	Southern African Development Community
SEA	Strategic Environmental Assessment
SOER	State Of the Environment Report
ST	Somarelang Tikologo
TA	Tribal Administration
TAC	Technical Advisory Committee
TBA	To Be Announced
TC	Town Council
TL	Thusano Lefatsheng
UB	University of Botswana
UNCCD	United Nations Convention to Combat Desertification
VDC	Village Development Committee
VPRD	Veldproduct Research and Development

WAD	Women's Affairs Department
WDM	Water Demand Management

Objective 1: Better understanding of biodiversity and ecological processes

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
1.1	National inventories of components of biodiversity (species and ecosystems) established	1.1.1	Clarify and establish government institutional responsibilities and focal organisations (wildlife, flora, birds, fish, insects, fungi etc) for collection and maintenance of national biodiversity data (Ref Objective 9 – Access to data), and establish mechanisms to facilitate and encourage deposit of biodiversity data collected by other data collectors and researchers at these focal organisations (Ref 9.4.2).	MEWT	MCST; NHBG, DWNP; DAR; UB; NCSA	12	12/05	NA	Organogram; Named institutions; TORs	1
		1.1.2	Establish national data collection standards through peer reviewed process and taking cognisance of international and regional standards, and disseminate to concerned institutions (Ref 9.1- data standards)	Focal institutions TBA;	BCA, BOBS; CSO; DAR; DWNP; MEWT; MCST; NHBG; UB	12	12/05	240,000	Set of standards; Data forms	2
		1.1.3	Set up national survey programmes for under-surveyed biodiversity groups, with priority given to the rare and endangered species, and implement programme (Ref 1.2.1 – target taxa)	Focal institutions TBA;	NHBG, DWNP;DAR: UB; BCA; DCO;CSO; MEWT, NGOs	48	12/08	324,000 pa	Checklists and distribution maps	3
		1.1.4	Include birds, fish, reptiles, amphibians and rare and endangered animal species in wildlife counts to monitor species levels and thus provide an indication of trends of biodiversity levels	MEWT;	DWNP; NHBG; UB; MOA; Birdlife	48	12/08	1,200,000	Published inventories	3
		1.1.5	Develop a detailed national vegetation map based on most effective technologies, including satellite information and make it easily available through the biodiversity CHM (Ref.9.3.2 - CHM)	MCST	UB; CHM; DSM	24	12/06	1,200,000	Vegetation map	1
		1.1.6	With the vegetation map as a base, establish national criteria and guidelines for ecosystems classification and delineation through consultation and peer reviewed process	DDC;DLUPU (MLG);	MEWT; UB; NGOs; MLG; Focal institutions TBA	2	06/07	120,000	Ecosystems criteria	2

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
		1.1.7	Classify and map ecosystems at district level according to established national classification criteria and standards.	MEWT	DDC; DLUPU; MOA; NGOs; UB	18	12/08	400,000	District ecosystems map	2
		1.1.8	Produce a national ecosystems map based on the district maps and make the map easily accessible through the biodiversity CHM (Ref 9.3 2– CHM)	MEWT	DDC, DLUPU; DSM	3	06/08	60,000	National ecosystems map	3
1.2	National biodiversity reference collections established for key groups	1.2.1	Identify and prioritise target taxa and areas according to established criteria for vertebrates and plants.	Focal institutions TBA	MEWT; NHBG; DWNP;DAR: UB; BCA	1	06/05	20,000	Priority list for various groups of biodiversity	3
		1.2.2	Appoint/Establish national centres of excellence with responsibility for collecting, housing and curating national *ex situ* and *in situ* collections and reference collections (link with data depository in 1.1.1) and strengthen national ability to classify and name taxa of main groups (mammals, birds, fish and plants).	MEWT	NHBG, DWNP;DAR: UB; BCA	6	12/05	TBA	Assigned focal centres	2
		1.2.3	Undertake large scale/multiple site collections of identified target taxa to strengthen national reference collections	Focal institutions TBA;	NHBG, DWNP;DAR: UB; BCA; NGOs	48	12/08	744,000 pa	Collection statistics	3
		1.2.4	Actively curate collections to maintain quality	Focal institutions TBA;	MEWT, DWNP, NHBG, UB, MOA	48	12/08	1,460,000 pa	Collections	1
1.3	A focused biodiversity research programme aimed at establishing biodiversity trends, understanding ecological processes and finding suitable biodiversity management solutions	1.3.1	Improve efficiency in allocating research permits for biological research and decentralise the monitoring of permits and collection of research results for better efficiency. Link permits with the requirement to use national data collection standards, (Ref 1.1.2 – data standards), to ensure compatible data and with legal and biosafety requirements for moving organisms (Ref 4.3.- legal framework)	MCST	OOP, UB	48	12/08	60,000	Number of research permits granted	3
		1.3.2	Review and update the Research Act taking the recommendations from the BSAP into consideration.	MCST	UB; MEWT	24	12/08	360,000	Updated Research Act	3
		1.3.3	Establish a biodiversity research fund	MFDP	MEWT; MCST; UB	48	12/08	960,000	Biodiversity Research Fund	2

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
		1.3.4	Establish biodiversity priority research topics, including under-represented taxa, species with genetic centres in Botswana, understanding of ecological processes and ecosystems management including carrying capacities, to guide allocation of funds.	MEWT	MCST; UB; NGOs	6	12/08	180,000		2
		1.3.5	Encourage cooperation and partnership development between Government, NGOs, communities, the private sector and regional and international institutions in biodiversity research through funding for example	MCST	UB; MEWT; PS; NGOs; Com	48	12/08	240,000	Research fund statistics	3
		1.3.6	Move towards setting of indicators for biodiversity and ecosystem functioning taking cognisance of regional and international standards. , and establish carrying capacity levels for livestock and larger wildlife.	MEWT	DWNP, NHBG, UB, MOA; DFREB	18	06/05	45,000	List of standards Carrying capacties	1
		1.3.7	Design compatible national and district level monitoring systems of biodiversity and ecosystem function, and assign responsibility for monitoring, including user based monitoring where relevant	MEWT	DWNP; NHBG; UB; MOA; NGOs; Communities; DFREB; DMS	12	12/05	120,000	Monitoring programme	1
		1.3.8	Develop training packages for monitoring by communities and other biodiversity users	MEWT	NGOs; CBNRM; DWNP; NHBG; UB; MOA	48	12/08	420,000	Training package	2
		1.3.9	Analyse monitoring data at appropriate spatial and temporal scales, establish trends, and use to establish national conservation priorities.	MEWT	DWNP; NHBG; UB; MOA; DFREB; CSO	48	12/08	140,000	Progress reports	2
		1.3.10	Disseminate status and trends to planners, managers and decision makers through progress reports and link with the State Of the Environment reporting	MEWT	DWNO; NHBG; UB; MOA	48	12/08	20,000	Distribution lists	3
1.4	Better understanding of the effects of socio-economic issues on biodiversity, including demographic change and HIV/AIDS	1.4.1	Evaluate the impact of HIV/AIDS on future biodiversity management and conservation capacity	NACA (MOH)	CSO; MEWT; MOA;, MEWT; MOA; MOH; NGOs, Private Sector	48	12/08	720,000	Research report	2

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
		1.4.2	Evaluate the impact of demographic change on future biodiversity management, preservation of traditional methods, varieties and indigenous knowledge.	MEWT	CSO; UB; NGOS, CBNRM	48	12/08	240,000	Research report	3
		1.4.3	Analyse the economic and cultural importance of livestock and veldproducts to individual Batswana to guide national planning and provision of livelihood alternatives.	MDFP	MOA; MEWT	12	12/06	360,000	Government briefing notes including cost benefit analysis of livestock and veldproduct sectors;	1

Objective 2: Long-term conservation of Botswana's biological diversity, genetic resources and related knowledge

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
2.1	Conservation efforts prioritised at national, district and levels	2.1.1	Develop national and district criteria for conservation priority setting, including cost benefit analysis (Ref 4.6 – Economic valuing of ecosystems)	MEWT	Focal institutions TBA	3	06/05	60,000	List of criteria	1
		2.1.2	Develop guidelines and framework for development of district level BSAPs and priority setting of activities, based on the national BSAP	MEWT	DA; DWNP; DTRP; MOA	2	06/05	120,000	Guidelines	1
		2.1.3	Prepare biodiversity and conservation strategies and action plans for each district	MEWT	DA; DWNP; DTRP; MOA; NGOs (local); Communities	10	06/06	7,200,000	10 District BSAPs	1
2.2	Comprehensive protected area network to conserve ecosystems and species	2.2.1	Identify potential gaps in protected area network through district BSAPs and national inventories	MEWT	DWNP, NMAG; DFREB; DOF;	1	08/06	20,000	Map and list of habitats	2
		2.2.2	Taking district BSAPs and RDL species into consideration, amend protected area network, including national monuments, to make it comprehensive, addressing critical connections between national and regional protected area networks and all major biodiversity groups	MEWT; MLH	DWNP, DTRP; LBs, Councils, TA; NMAG; Communities	TBA	12/08	TBA	Protected area network	3
		2.2.3	Establish Important Plant Areas (IPAs) according to international standards and link these and Important Bird Areas into protected area network	NHBG (MLHA)	LB; ARB; MEWT; DF; NGOs (CI, FAB, KCS, TL, VPRD); Traditional healers	6	08/06	380,000	List of IPAs	2
2.3	Effective ecosystems management practices in place	2.3.1	Strengthen the mandate and efficiency of the CBNRM Technical Advisory Committees (TACs).	DA	Relevant district institutions	2	06/05	50,000	TACs	3
		2.3.2	Review current national and regional land management systems (including rangeland and fire management practices) and land uses in terms of effectiveness in biodiversity conservation, identifying weaknesses, strengths and best practices (Ref 10.3.6 – learning from regional experiences; 3.5 – Sustainable rangeland management; 3.3 – involving coumunities)	MEWT	DWNP, MOA; MTI, MMEWA; MLH; MLG, DFREB; DoF; NGOs (local + CI, KCS, IUCN, KDT, FAB, BLB, OPWT), MWT; Com	12	12/06	740,000	Report with landuse systems prioritised for conservation	1

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
		2.3.3	Identify and fill potential gaps and strengthen existing institutions including the extension service to enhance ecosystem management capacity	MEWT	DWNP, MOA; MTI, MMEWA; MLH; MLG, DFREB; DoF; NGOs (local), MWT; Communities	12	12/08	TBA	Organogram; Number of staff trained in ecosystems management	2
		2.3.4	Seek and secure funding for effective long-term ecosystems management (Ref 4.5 – financial mechanisms)	MEWT	DWNP; MFDP; NGOs; Donors; PS	12	12/08	240,000	Accounts	1
		2.3.5	Encourage conservation measures in designated Wildlife Management Areas (WMA) and areas bordering the protected areas through incentives and education	MEWT	DWNP; DFREB; NGOs; Donors; PS	48	12/08	TBA		2
		2.3.6	Research and attempt to minimise areas of conservation and land-use conflict, and put research results into practice through incentives and policy framework.	MEWT	NGOs; UB	12	12/08	720,000		1
2.4	Needs of species, in particular threatened and endemic species addressed	2.4.1	Establish conservation status and develop National Red Data Lists for all major animal and plant taxa in Botswana and develop mechanisms for biannual updating processes	MEWT	Focal institutions TBA; NHBG; MOA; DFREB; NGOs; UB	48	12/08	1,224,000 pa	RDLs	1
		2.4.2	Develop and implement management and recovery plans for priority taxa, including RD species (Ref 5.2.1 – early warning)	Focal institutions TBA	MEWT	48	12/08	30,144,000	Recovery plans; RDL statistics; Ex situ and in situ collections	2
		2.4.3	Support and promote *in situ* and *ex situ* conservation activities for rare, threatened and endemic species (Ref 5.2.2 – conservation of RD species)	Focal institutions TBA		48	12/08	1,224,000 pa	Facilities	1
2.5	Effective management systems for economically important non-domesticated species in place	2.5.1	Undertake inventories of the key traded (medicinal, food and collectible) faunal and floral species, identify species of economic value and assess conservation status and level of protection required	ARB (MEWT)	Traditional healers; NHBG; AGC; DWNP; DCE	8	12/06	280,000	Collections; Legislation	1
		2.5.2	Develop propagation and harvesting protocols for key animal and plant species with commercial value which are under potential threat from over-harvesting and encourage domestication and cultivation	NHBG (MLHA); MOA	MEWT; NGOs (PC; TL, VPRD, FAB); Com, Farmers' Association	12	12/13	3,700,000	List of cultivated species and varieties	2

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
2.6	Conservation of agricultural biodiversity	2.6.1	Determine availability and distribution of agrobiodiversity in Botswana and identify farming systems which sustain high diversity as well as the human resource base needed to maintaining agrobiodiversity (Ref 2.5.2 – description of agrobiodiversity)	MOA	NGOs, BCA, UB	48	12/08	2,400,000	Survey report	1
		2.6.2	Based on the above, establish a national agrobiodiversity database containing distribution of species, varieties and strains available in the country and conservation status and make provisions for regular updates	MOA	NGOs	48	12/08	1,920,000	Agrobiodiversity database	3
		2.6.3	Design and implement a collecting programme for long-term *ex situ* preservation of agrobiodiversity.	MOA	NGOs; BCA	48	12/08	504,000 pa	Agrobiodiversity collections	2
		2.6.4	Continue characterisation, research potential and use (breeding, genes for biotechnology) focusing on the groups which have genetic centres in Botswana (Ref 8.4 Bio-prospecting)	MOA	BCA, NGOs, UB	120	12/13	1,920,000 pa	Described species and varieties	1
		2.6.5	Based on 2.6.1, develop models and approaches, which promote a living landscape, and *in situ* preservation of agrobiodiversity at species and genotype levels. Subsequently, actively promote and support the adoption and implementation of biodiversity-friendly farming systems	MOA	MEWT, NGOs, Com	24	12/08	960,000	Agrobiodiversity management plan; MOA statistics	2
		2.6.6	Involve communities in *in situ* conservation of agrobiodiversity and encourage the inclusion of indigenous knowledge systems into farming systems	MOA, MEWT	NGOs (PC); Communities; BAMB	48	12/06	1,440,000	MoA and market statistics	2
		2.6.7	Develop mechanisms for the protection of plant breeders' rights, including landraces, linked with IPR	MOA	MEWT, AGC	6	12/06	360,000	IPR	3
2.7	Development and implementation of methods for appropriate rehabilitation and restoration of degraded ecosystems	2.7.1	Develop easy to use guidelines on the principles of rehabilitation and restoration for various sectors (Ref 6.3.2 – promotion of indigenous plants)	MEWT	UB; MCST	6	12/08	1,800,000	Guidelines	2

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
		2.7.2	Develop cost calculations for restoration and rehabilitation of destroyed habitats and include in EIA cost benefit analysis (Ref. 4.6 – economic valua	MEWT	MFDP, MLH. MMEWA	12	12/06	720,000	List of costs	2
		2.7.3	Intensify measures to rehabilitate degraded rangelands. District authorities to set targets.	MEWT/MOA	Com	48	12/08	48,000,000	BRIM data	1
		2.7.4	Introduce a system linking land-use rights with the responsibility for rehabilitation and restoration if appropriate and structures for enforcement (Ref. 7.2 – Linking access with responsibility). For example, develop biodiversity damage compensation and charge system to land uses with adverse biodiversity impacts (Biodiversity impacts internalised	MEWT	MOA; MOLH; MLG; LBs; Com	48	12/08	240,000	Land use contracts	1
2.8	Indigenous knowledge recorded and conserved	2.8.1	Establish legal and financial principles and procedures for collecting and disseminating indigenous knowledge	MLHA	NMAG; NCSA; NGOs; Com, Traditional healers; UB	48	12/08	TBA	National IKS records	1
		2.8.2	Establish responsibility for collection and storage of indigenous knowledge and when Intellectual Property Rights (IPR) legislation is in place, collect and record indigenous knowledge	MEWT; MLHA	NMAG; NCSA; NGOs; Com, Traditional healers; UB	6	12/07	180,000	Guidelines for IKS	2
		2.8.3	Preserve local knowledge of medicinal plants and encourage the transfer of knowledge through, for example, school market gardens and medicinal plant displays in botanical gardens (Ref 6.5.2 – school market gardens; 6.6.7 – medicinal gardens	MOA, MEWT	NGOs, NHBG; Com; MOE	48	12/08	530,000	National records of medicinal plants;	2

Objective 3: Sustainable utilisation of all components of biodiversity in Botswana through appropriate land and resource use practices and management

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
3.1	Biodiversity consideration and essential ecological processes adequately incorporated into national land use and resource planning processes	3.1.1	Institutionalise the operational guidelines of the ecosystem approach and the BSAP into resource management and sustainable land use strategies at all levels in institutions concerned with policy, planning and conservation and management of biological resources, through a). Adaptation of guidelines and planning manuals; b) Preparations of information materials c) Training of staff	MEWT	MFDP; MOA; MLG; MLH; MLHA; MMEWA; MTI; MWT; DA; BIDPA	12	12/08	240,000	No of trained staff; Planning manuals; Guidelines, DDPs and NDPs	2
		3.1.2	Integrate biodiversity concerns into Strategic Environmental Assessment (SEA) guidelinesand carry out SEAs for major policies and programmes	MFDP	MEWT	12	12/08	240,000		1
		3.1.3	Include biodiversity consideration into national audits and accounts (Ref 5.7.1 – cost of pollution; 4.6 – environmental costs).	MEWT	DWNP; DLUPU; MOA	12	12/08	TBA	Protected area network	2
		3.1.4	Designate appropriate areas for biodiversity conservation, including wildlife corridors, making allowances for migration routes and other species requirements as appropriate and gazette (e.g. WMAs). (Ref. 2.3.5; 2.2)	MEWT	DWNP; DLUPU; MOA	12	12/08	TBA	Protected area network	2
3.2	Identification and promotion of biodiversity compatible land and resource uses, including tourism	3.2.1	Evaluate the impact of different land management policies on biodiversity conservation	MEWT	MOA; MLH; MLG; DTRP, Com; IVP	3	12/07	60,000	Rangeland and veldproduct policy and evaluation reports	1
		3.2.2	Develop land use best practices guidelines and consider creation of incentives for appropriate land-uses, taking regional CBNRM experiences into consideration (Ref 4.1.2 – Review of policies and incentives).	MEWT; MLH	MOA; MMEWA; MLG; MTI; NGOs (CI; IUCN, KCS, KDT, FAB,BLB, PC, TL, CPRD)	12	12/06	255,000	Guidelines	1
		3.2.3	Investigate tourism potential in support of biodiversity and landscape conservation and promote conservation partnerships where relevant.	DOT (MEWT)	MEWT; HATAB	12	12/08	1,220,000	Tourism statistics	3
		3.2.4	Promote integrated landscape planning, with priority given to around protected areas and urban areas	DTRP	TC; DWNP	6	12/08	120,000	Landuse plans	2

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
3.3	Increased levels of community participation and use of indigenous knowledge systems in land use and sustainable management processes	3.3.1	Diversify (geographically and natural resource use) and strengthen support to CBNRM (Ref. 6.7.1 – role of communities and NGOs)	MEWT	MEWT; ARB; Parliament; DWNP; DTI; DFREB; DOF	6	12/04	120,000	CBNRM policy approved; Number and location of non wildlife based CBNRM activities	2
		3.3.2	Re-establish effective Common Property Resources (CPR) regimes, including access to communal resources, and develop a plan for implementation of Community Based Strategies	MEWT	DWNP; MLG; NGOs (CI; IUCN, KCS, KDT, FAB,BLB, PC, TL, CPRD); DP; ARB; DTI; DFREB; DOF	6	12/07	120,000	CPR guidelines	1
		3.3.3	Integrate poverty alleviation measures, in accordance with the Millennium Poverty Reduction Target and Vision 2016, into biodiversity conservation policies and programmes	MFDP	RDC; DA	12	12/13	340,000	Anti poverty programme; Labour statistics	2
		3.3.4	Strengthen mechanisms to allow communities to engage effectively in policy dialogue, planning, design and management of natural resources and biodiversity in community areas, and thereby allow for inclusion of indigenous knowledge systems and traditional practices.	MLG	DLUPU, DDC; NGOS (all), CBOS, Communities; BOCOBONET	2	12/08	40,000	Consultation reports	1
		3.3.5	Strengthen the capacity of NGO and CBOs in sustainable biodiversity use and management through human resources development	MEWT	MOA; CBOs; NGOs (all)	5	12/08	1,050,000	Workshop reports	3
3.4	Sustainable use of fuelwood and forest resources	3.4.1	Update and approve the Forestry Policy and subsequently the Forestry Act	MEWT	DFREB; Parliament; AGC; FAB	24	12/06	720,000	Forestry Policy, Forestry Act	1
		3.4.2	Based on the updated Forestry Act establish enforcement mechanisms.	MEWT	DOF; Pollice; BDF	48	12/08	TBA	DOF organogram; Forest Reserve Management Plans	2
		3.4.3	Update the biomass inventory and assess forestry biodiversity trends and patterns	MEWT	FAB; DFREB	6	12/05	120,000	Report	3
		3.4.4	Identify and introduce alternative energy sources through a) Inventory of available alternatives; b) evaluation of alternatives; c) financial incentives introduced for environmentally friendly energy sources; d) Information campaign	MMEWA; MEWT	MFDP; DFREB; NGOs (FAB; ST, IUCN); PS; BOTEC	24	12/06	720,000	Reports; Information materials; Alternative energy subsidies	1

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
		3.4.5	Promote and establish network of fuelwood plantations and community woodlots using indigenous species in all 10 districts	DFREB (MEWT)	NGOs (FAB), CBO; VDC, VET, Farmers committees, Forest conservation committees, Soil conservation units	12	12/06	TBA	No of woodlots	1
		3.4.6	Develop Forest Reserve Management Plans			12	12/08			3
3.5	Rangeland/dryland biodiversity maintained through promotion of sustainable use of natural rangelands for economic growth and ecological balance	3.5.1	Survey rangeland biodiversity (ref Indigenous Vegetation Project and BRIMP) and continue rangeland monitoring, including bush encroachment, allocation and use of water points, stocking and grazing levels, donkey population, fire etc.	BRIMP (MOA); DFREB (MEWT)	MOA, MEWT; ARB; LB	12	12/08	1,320,000	BRIMP reports	1
		3.5.2	Continue extension on rangeland management including conservation measures, stocking rates and alternative uses such as game farming to encourage sustainable use	MOA	Farmers committee, DLUPU, Conservation Committees, Cooperatives Societies	48	12/08	36,100,000	Stocking and rangeland statistics; BRIMP reports	1
		3.5.3	Review the Tribal Grazing Land Policy and other legal and policy instruments related to grazing rights and the use of communal land	MFDP	MOA; LLH; MLG; MEWT	3	12/06	60,000	TGLP	1
		3.5.4	Complete gazetting of Wildlife Management Areas (WMAs), grazing areas and mixed farming areas, and develop and implement Management plans.	MLH	MEWT; MLG; Landboards; District offices; Com	6	12/06	120,000	Gazetted land	1
		3.5.5	Introduce and implement appropriate water charges - Ref 5.5 - Water	MMEWA; MEWT	MEWT; MOH	12	12/06	240,000	Water charges	1
		3.5.6	Provide incentives to reduce overgrazing and to restore rangeland degradation, as per the recommendations in the National Conservation Strategy and recommendations by the Indigenous Vegetation Project	MOA	MEWT; Com; NGOs; MLH	24	12/06	TBA	Official policies and subsidies	1

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
		3.5.7	Encourage and promote schemes to clear and utilise bush encroachment, and link with the search for alternative energy sources (3.4.4 – inventory of alternative fuel sources) and community participation in conservation (Ref. 3.3).							
3.6	Sustainable use of wetlands ecosystems, biodiversity and ecological processes	3.6.1	Approve wetland policy and start implementation	Parliament, MEWT	UB; Com; NGOs	2	12/05	40,000	Wetland	1
		3.6.2	Implement wetland management strategy making provisions for increased community participation in wetlands management and planning, and give special consideration to issues of access	HOORC (MOE), MEWT	MLH, DLUPU; DTRP; DOF; DWA; regional institutions, Communities	48	12/08	TBA	Wetland Management Strategy	2
		3.6.3	Continue implementation of the Ramsar Convention on Wetlands and wetland management plans	MEWT	DoF; DWA; DWNP; NHBG; DOT; DMS; NGOs (CI, IUCN, KCS; OPWT); Communities; BDF; Police; DCE; AGC; DLUPU	48	12/08	100,000	Ramsar reports	3
		3.6.4	Enhance national capacity for wetlands management, protection regulation and enforcement and integrate the principles of ecological water needs in planning and implementation	MEWT	DoF; DWA; DWNP; NHBG; DOT; DMS; NGOs (CI, IUCN, KCS; OPWT); Communities; BDF; Police; DCE; AGC; DLUPU	12	12/08	1,200,000	Workshop and training courses; Legislation	2
		3.6.5	Strengthen regional river basin management collaboration	MFAIC;	MEWT; SADC; DWA; NGOs	48	12/08	240,000	Regional agreements	2
3.7	Sustainable use of wildlife resources and wild plants	3.7.1	Develop a comprehensive strategy and programme for sustainable use of wildlife resources including setting of quotas, monitoring or resources (Ref. 1.3.7 and 1.3.8 – National and community monitoring of resources) and strengthening of enforcement capacity at the national level	DWNP (MEWT)	ARB; DFREB;NGOs (BLB, CI, IUCN, KCS, KDT,OPWT, PC, TL, VPRD), communities; BDF; DCE, Police	24	12/06	14,400,000		2

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
		3.7.2	Assess current intervention strategies for community livelihood loss due to wildlife conflict and promote farming systems which minimise wildlife conflict through the extension services, and strengthen the effectiveness of these programmes in consultation with affected communities (Ref 2.3.6 – Reduction of land-use conflicts; 2.7.1 and 3.8.2 – faming systems).	DWNP (MEWT)	MEWT; CBNRM; CBO; Communities	24	12/06	240,000	Compensation regulations; Compensation paid	1
		3.7.3	Develop community capacity to utilize natural resources in income generating activities and to secure access for sustainable use strategies (Ref 3.3.5 - Capacity; Objective 7- Access and benefits)	NGOs (CI, KCS, KDT,OPWT, PC, TL, VPRD, ST)	CBOs, com; CEDA; DWNP; MTI; MLG	48	12/08	600,000	Number of people trained; ABS legislation	2
		3.7.4	Provide communities and individual with livelihoods options through assisting with assessment of potential markets for the sale of natural resource products and facilitated access through credit and enterprise schemes, while linking with quality control and resource allocation permits as appropriate (Ref 6.6.2 – Women's credit schemes; 3.9.2 - Veldproducts	MFDP	MEWT; CIDA; MOA; NGOs; Com	48	12/08	TBA	CBNRM reports	2
		3.7.5	Develop code of conduct for traditional healers and users of medicinal species (7.3.2 - IKS)	MEWT	Traditional healers; DFREB; NHBG; MOH; NGOs (IUCN, VPRD, TL)	2	12/05	40,000	Code of conduct	2
3.8	Sustainable use of agricultural biodiversity	3.8.1	Implement programme and strategy for maintenance of agrobiodiversity (breeds and strains) and identify and promote best practices (Ref 2.7 – Use of indigenous species in habitat restoration)	MOA	NGOs (PC); Communities	48	12/08	3,600,000	Strategy; bet practices guidelines	1
		3.8.2	Create awareness about the value of genetic diversity and locally adapted breeds and promote indigenous farming systems which encourage high diversity (Ref. 2.6 – Conservation of agrobiodiversity)	MoA	NGOs (CI, IUCN, KCS, KDT,OPWT, PC, TL, VPRD, ST); Farmers Associations; Communities; MEWT	48	12/08	3,600,000	Agricultural statistics	2
		3.8.3	Improve availability of traditional and improved seed varieties and breeding materials to smallholder and other farmers.	DAR (MOA)	BAMB; PS; NGOs (PC); BCA	48	12/08	12,000,000	Agricultural statistics	2

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
		3.8.4	Review Government seed distribution/drought relief and encourage distribution of more traditional varieties.	MOA. MOP		2	12/06	40,000	Seed distribution statistics	3
		3.8.5	Encourage the uses of traditional varieties and strains/breeds of livestock and crops for special uses for the development and support of niche markets that will in turn encourage individuals, communities and institutions take interest in availability of the propagation materials.	MOA	BAC; Communities; NGOs (PC); Farmers Associations; BMC	48	12/08	480,000	Agricultural statistics	2
		3.8.6	Educate farmers about the benefits and risks of Genetically Modified Organisms, integrated pest management and the pros and cons of hybrid and improved varieties versus land races and traditional varieties (Ref 5.6 – threats to biodiversity; 8.2.3 – GMO guidelines)	MOA	NGOs (PC); Farmers Association	48	12/08	1,080,000	Agricultural statistics	2
3.9	Sustainable and efficient use and trade in veldproducts for maximum economic and livelihoods benefits	3.9.1	Develop and approve veldproduct policy	ARB (MEWT); Parliament	MOA; DWNP; NGOs (CI, IUCN, KCS, KDT,KY, OPWT, PC, TL, VPRD); Communities; BAMB; BIDPA	6	12/06	120,000	Veldproduct policy	2
		3.9.2	Decentralise harvest allocations of non-threatened species to a multidisciplinary team chaired by the Tribal Authority (Chiefs) and provide them with the necessary tools and guidelines to ensure sustainable use and transparency and accountability in the allocation process. National control should be maintained over the RDL species and species threatened by overexploitation.	ARB (MEWT), Chiefs	MEWT	12	12/07	245,000	Annual reports	2
		3.9.3	Extend the Agricultural Resources Board (ARB) veldproduct monitoring system to include models for quota setting, carrying capacity guidelines, monitoring and enforcement capacity in local and national resource users, organisations and regulatory agencies	ARB (MEWT)	Conservation Committee, DLUPU; MEWT; NGOs (VPRD, KY, TL); Communities; UB; NHBG; DCE ; CSO	24	12/06	4,920,000	Monitoring system	1

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
		3.9.4	Identify enterprise development opportunities and alternatives in community based natural resources and conduct product feasibility studies and market assessments to form the basis for viable industries, taking the regional context into consideration (Ref 3.7.4 – Use of natural resources).	MTI	ARB; NGOs (CI, KCS, KDT, KY,OPWT, PC, TL, VPRD, ST); CBOs; communities; CEDA	24	12/08	480,000	Feasibility reports	2
		3.9.5	Facilitate access through credit and enterprise schemes, while linking with quality control and resource allocation permits as appropriate (Ref 3.7.4 – Use of natural resources, 10.3 - Regional markets, Object 7 – Access and benefit-sharing)	MTI	CEDA; ARB; MEWT; SADC; concerned NGOs	48	12/08	1,100,000	Trade statistics	2
		3.9.6	Introduce regulated tendering for commercial resource rights, taking precautions not to dis-empower poorer households.	ARB (MEWT)	MFDP; MEWT; MTI	2	12/08	200,000	Trade and Industry statistics	3
		3.9.7	Expand Natural Resources Allocation (NRA) programme to wildlife, rangelands and key veldproducts	MEWT	MFDP	2	12/04	40,000	Report	3
		3.9.8	Support the setting up of commercial village craft centres and let prices be determined by the forces of supply and demand at these centres (Ref 3.9.4 – market opportunities and credit schemes)	CBOs; NGOS; PS	CEDA; BEDIA; MTI	48	12/08	TBA	Trade statistics	3

Objective 4: An institutional environment, including financial and human capacity, conducive to effective biodiversity conservation, sustainable use and management

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
4.1	Cross sectoral coordinated approach to national biodiversity conservation and use with roles and responsibilities clearly defined and mechanisms in place to facilitate coordination	4.1.1	While overall national responsibility for biodiversity conservation has been assigned to MEWT, specific roles for various components of biodiversity and management between government, NGOs and the private sector clarified and responsibilities assigned	MEWT	Focal institutions TBA; UB; NHBG; DWNP; DoF, DFREB; NGOs; MOA;	1	12/04	20,000	Organogram	1
		4.1.2	Review the NCS and other relevant sectoral policies, action plans, incentives, subsidies and other programmes of government ministries, departments and institutions, and NGOs for biodiversity issues, in order to avoid duplication, to harmonise activities and to identify and address perverse incentives and subsidies if necessary (Ref. 4.2.1 – Biodiversity Policy)	MEWT	All sectoral ministries, LB, TA; BIDPA; DLUPU; DA	10	12/08	600,000	BD coverage as part of SEA; adjustments in existing policies	1
		4.1.3	Based on the BSAP, National Conservations Strategy (NCS) and the policy review, develop an integrated strategic policy framework to address cross cutting issues such as decentralisation and local management, incentives and regulatory framework, integration with international conventions, CBD ecosystem approach, threats to biodiversity and measures to mitigate declines in economic activities due to HIV/AIDS	MEWT	All concerned sectoral ministries; NGOs; Com; PS; UB	18	12/08	1,080,000	Policy framework	2
		4.1.4	Establish and staff an environmental policy formulation and evaluation unit for intersectoral planning and policy formulation, and develop and implement an integrated and intersectoral policy framework for sustainable natural resource management and biodiversity conservation (Ref 4.2.1- Biodiversity policy)	MFDP	All sectoral ministries, LB, TA; BIDPA; DLUPU; DA; NGOs	3	06/05	60,000	workshop	3
		4.1.5	At district level form biodiversity crosscutting committees under the District Development Committees (DDC), linking with the Technical Advisory Committees (TACs) (Ref 2.3.1 – Technical Advisory Committees), with mandate to coordinate biodiversity issues and set up biannual meetings	DA (MLG)	DDC; DLUPU; DWNP, FDREB; MOA; DOT; Police; Immigration; DCE	25	12/05	500,000	Committee meeting minutes	2
		4.1.7	Coordinated by MEWT, set up permanent task force groups for the various components of biodiversity conservation and management, with representative from all sectors, focusing on various components of biodiversity conservation and management. Use these groups for policy	MEWT	All concerned sectoral ministries; NGOs; Com; PS; UB+F8	3	12/06	60,000	Task force groups, membership lists and minutes	3

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
			advice and reference and link with Technical Advisory Committees and District Development Committees (Ref 4.1.5 – District Development Committees; 2.3.1 – CBNRM TAC)							
		4.1.8	Establish a multi sectoral cross sectoral resource allocation and charge model	MEWT	MFDP	3	12/04	200,000	Revised charges and allocation mechanisms	2
		4.1.9	Streamline the BSAP into the State of the Environment reporting and other national environmental programmes	MEWT		5	12/08	100,000	SOER	3
4.2	Comprehensive legal framework for the protection of species and ecosystems with appropriate mechanisms in place for implementation and enforcement	4.2.1	In line with the recommendations of the NCS and the BSAP establish an over-aching National Conservation Act or other omnibus suitable legislation framework to cover the various aspects of environmental issues including biodiversity	MEWT	C+F7oncerned institutions; NGOs; UN; Private sector F8	36	12/08	7,200,000	Legislative framework	1
		4.2.2	Identify gaps in current legislation with regards to national, regional and international standards and needs, relating to biodiversity conservation and sustainable use of biodiversity. Update and complement the legal framework accordingly, while aiming to harmonise laws within the region	MEWT	AGC; MOA; NGOs	18	12/08	1,080,000	Project report	1
		4.2.3	Empower all law enforcement organisations and departments to implement the biodiversity legal framework, including related laws, policies and bye-laws (Ref 5.4.3 – enforcement of EIA)	MSP; Parliament	AGC; MEWT; DC, TA; VDC, ARB; MLHA; MLG; DCE	200	12/13	4,000,000	Enforcement plan	2
		4.2.4	Develop incentive strategies which promote community involvement in enforcement activities	MLHA	MEWT; DWNP; DCE	12	12/08	240,000	Communities part of monitoring scheme	3
		4.2.5	Strengthen and streamline licensing and permit system for import and export of biodiversity components, including for research (Ref 1.3.1 – Research permits), to include transparent mechanisms, printed guidelines and set time/performance targets.	ARB (MEWT)	MEWT; NBSC; DCE; UB	24	12/08	480,000	import and export statistics	1
4.3	Enhanced institutional biodiversity capacity at all levels for effective planning, research, monitoring and legal enforcement.	4.3.1	Establish MEWT/NCSA district offices/officers to improve communication between the national and district levels (Ref 6.2.2 – dissemination of policy)	MEWT	MLG; DA	600	12/06	2,424,000 pa	Organogram	2
		4.3.2	Review existing institutional infrastructure and capacity with regards to planning, research, monitoring and legal enforcement in biodiversity conservation and sustainable use (Ref 5.6.8)	MEWT	All ministries; PS; NGOs	6	12/05	360,000	Consultancy report	1
		4.3.3	Based on the above appoint and establish national or regional, if relevant) centres of excellence for biodiversity key groups (invertebrates, flora, birds fungi, micro-organisms etc. Responsibility for wildlife has already been established through	MEWT	Focal institutions TBA; UB; NHBG; DWNP; DoF, DFREB; NGOs; MOA; SADC; NGOs; PS	1080	12/08	4,320,000	Established focal centres	1

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
			DWNP), clarifying institutional responsibilities and draw up TORs to include establishment and curation of national biodiversity collections. mechanisms for depository of data, and hosting of data etc (Ref. 9.3.1 – Access to data; 1.2.2. – Housing of data and reference collections).							
		4.3.4	Strengthen the Agricultural Resources Board (ARB) for effective veldproduct management and monitoring	ARB (MEWT)	MEWT	48	12/06	1,050,000	Species monitoring systems in place	1
		4.3.5	Strengthen Ministry of Environment, Wildlife and Tourism (MEWT) capacity for effective management of Environmental Impact Assessments (EIAs), including preparation of national EIA guidelines and quality control of EIAs (Ref. 5.4.1- EIA guidelines)	NCSA (MEWT)	MEWT; MFDP	48	12/06	960,000	No approved EIAs	1
		4.3.6	Review and evaluate existing taxonomic and biosystematics capacity and infrastructure and provide adequate funding for strengthening national ability to identify organisms of major groups (plants, mammals, birds, fish, pests)	MEWT	UB; NGOs; NHBG; DWNP; Concerned ministries	3	12/08	TBA	Biology expertise database	3
		4.3.7	Compile and publish a national and regional register/directory of bio systematic expertise	MEWT		3	12/05	160,000	Directory of expertise	2
		4.3.8	Actively encourage training to fill gaps as identified in biodiversity training needs assessment	MFDP	MEWT; Donors, PS	6	12/06	120,000	Biodiversity fund increase	2
		4.3.9	Train planners in environmental economics at national and district levels	MEWT	MFDP; All ministry planners; DLG	30	12/08	700,000	Workshops	1
		4.3.9	Organise study tours for key planning officers to study new ways of implementing and incorporating environmental planning principles into national, district and town planning procedures and decision-making. South Africa, is at the forefront of implementing innovative methods to encourage mainstreaming of environmental and biodiversity concerns into planning processes and decision-making	MFDP	MEWT; District Planners	48	12/08	150,000	No of study tours	2
4.4	National *in situ* and *ex situ* conservation capacity strengthened	4.4.1	Develop comprehensive *ex situ* genetic resources conservation programmes for wild and domesticated animals and plants (Ref 1.2.3 – Collecting programmes)	MEWT/MOA	DWNP; NHBG; UB; NGOs; PS; Com	12	12/06	720,000	Ex situ conservation programme	2
		4.4.2	Strengthen human capacity and infrastructure in existing herbaria, museums, national parks and gene banks	NMAG; MOA; UB; MEWT	NHNG; DWNP;	84	12/08	1,780,000	Status and health of collections	2
		4.4.3	Develop a living collection of medicinal plants at National Botanical Gardens, and duplicate in other botanical gardens as appropriate	NMAG	NHBG	24	12/08	290,000	Living collection	3
4.5	Financial mechanisms and finance in place for biodiversity related	4.5.1	Develop funding mechanisms and funding guidelines for biodiversity activities, e.g. reinvest	MEWT	MFDP	12	12/08	720,000	Funding guidelines; biodiversity account	2

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
	activities		biodiversity charges towards conservation and rehabilitation in line with the proposed Environmental Fund under NDP9 (Ref. 3.1.4 – national audit; 2.3.4 – Seek funding)							
		4.5.2	Extend legal requirements to include the "polluter pays principle" and extend to reasonable levels of rehabilitation of destroyed habitats, and combine with adequate enforcement mechanisms.	MEWT	AGC	TBA	12/08	TBA	EIA legislation; Enforcement statistics	3
		4.5.3	Through the national accounts, provide sufficient financial means to ensure good curation and maintenance of invaluable national *ex situ* and *in situ* genetic collections (Ref. 3.1.4)	MEWT	MFDP; ex situ facilities; NMAG; MOA; UB	TBA	12/08	TBA	Ex situ facilities; National accounts	1
4.6	Economic value of ecosystems and other relevant environmental values and cost established and incorporated into national accounts	4.6.1	Value and carry out cost-benefit analysis of the most important natural resources, including the livestock and wildlife sectors, and ecosystems	MEWT	MFDP; MoA	45	12/08	2,727,000	Valuation reports; use of results in resource planning and NDP10	2
		4.6.2	Develop case study material for Botswana to show how environmental costs can be estimated	MEWT	MFDP; MEWT; MLG; DA	30	12/08	1,827,000	Reports; use of results in amending policies and programmes	1
		4.6.3	Incorporate environmental costs into national accounts and establish specific resource accounts for wildlife, veldproducts, wood and grazing resources (Ref 3.1.4, 2.3.4,2.8.3 – dost of restoration4.11.1)	MEWT	MoA, DWNP; CSO	30	12/07	1,840,000	Established accounts	1

Objective 5: Coping with environmental change and threats to biodiversity

No	Strategic target	No	Activity	Lead institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
5.1	Early warning mechanisms and mitigation plans in place to minimise effects of natural disasters on biodiversity	5.1.1	Develop national environmental indicators and monitoring sites as part of a long-term biodiversity/environmental early warning monitoring programme through a peer reviewed process and implement programme (Ref 1.3 – monitoring and trends)	MEWT	NDMO; TAC; Expert groups; ARB, UB; DMS; MOA	80	12/13	1,800,000		Sites; list of indicators	1
		5.1.2	Based on the above monitoring programme, set up a national biodiversity early warning system with defined mechanisms of response action, which is linked with regional and international early warning programmes (ref. 10.3.3 – regional cooperation).	MEWT	DMS; MOA; MEWT, DPC	36	12/08	780,000		Early warning plan	2
		5.1.3	Establish channels for making early warning results and decision regularly available to the Disaster Management Office and to policy makers, planners and managers of biodiversity and other stakeholders.	MEWT	DMS; MOA; MEWT, DMC	5	12/08	100,000		Early warning reports	3
		5.1.4	Based on the early warning system, design specific mitigation plans and put necessary infrastructure in place to cope with potential natural disasters	NDMO (MSP)	Concerned ministries TBA; BDF	TBA	12/13	TBA		Mitigation plans	2
		5.1.5	Mainstream environmental disaster management into the national development budget (Ref 4.6 – financing mechanisms)	MFDP	NDMO; DMC; concerned ministries TBA	5	12/08	100,000		NDP	1
5.2	Conservation strategies and facilities in place to address identified threats.	5.2.1	Make detailed assessment of current biodiversity threats by district and develop appropriate prevention strategies with identified key actors (District BSAPs – 11.3) and links to the national biodiversity early warning system (ref 5.1.2); Report results in the State of the Environment Report and distribute to all involved sectors	MEWT	MOA; NHBG; ARB; DMS; NGOs; DFREB; DOFF; Communities	36	12/08	740,000		Prevention strategies	1
		5.2.2	Design recovery and management plans for all RD species and carry out *ex situ* conservation of appropriate species (Ref 2.4.3 – conservation of RD species)	Focal institutions TBA	MEWT	25	12/08	500,000		Management plans	1

No	Strategic target	No	Activity	Lead institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
5.3	Effects of climate change on vegetation, animals and livelihoods investigated to allow for appropriate responses	5.3.1	Research effects of climate change on biodiversity, focusing on impacts on vulnerable species and areas (Ref. 10.3.3 – regional cooperation)	DMS (mEWt9	MEWT; Focal institutions TBS; NGOs	100	12/08	2,100,000		Research reports	1
		5.3.2	Integrate drought and other climatic concerns into sectoral planning especially agriculture (Ref 5.1.5 – environmental disasters)	MEWT	MOA; DMS	5	12/08	100,000		Sectoral plans, NDP	2
		5.3.3	Establish breeding programmes for drought tolerant agrobiodiversity varieties and breeds and develop appropriate agricultural methods	MOA	NGOs	360	12/13	7,220,000		New varieties; guidelines	3
5.4	Reduced levels of habitat destruction and degradation	5.4.1	Develop national EIA guidelines to cover all sectors and incorporate EIA into the sub district development plans	MEWT	MFDP; DDC, MLG, MFDP	6	12/05	360,000		National guidelines	1
		5.4.2	Develop and set standards for EIAs, including biodiversity and habitat considerations, for all sectors	MEWT	MMEWA; MWT; MOA; MH; MLG	3	12/05	60,000		Standards	1
		5.4.3	Enforce EIA and mitigation measures through appropriate penalty scheme for non compliance (4.3.3 – Enforcement capacity, 7.2.2 – EIA follow-up)	MEWT	MFDP; AGC; Police; MFDP	TBA	12/08	TBA		EIA unit statistics	2
		5.4.4	Critically examine the effects of the Agricultural Policy, of 1991 especially the accelerated fencing component and the Tribal Grazing Land Policy (TGLP), on biodiversity in the rangelands, and revise if necessary (Ref 4.1.2 – Review of policies)	MEWT	MFDP; MOA	3	12/05	180,000		TGLP and Agricultural Policies	1
5.5	Sustainable water use and management with the objective to maintain biodiversity levels	5.5.1	Promote wise use of water through: a) awareness campaigns; b) support of Department of Water Affairs' Water Demand Management (WDM) programme; c) improved allocation of water resources; d) up-dated water accounts; e) increase in direct re-use of wastewater	DWA (MMEWA)	WUC; DSWM; MEWT; NGOs; MLG; MMEWA	100	12/08	2,100,000		Water use statistics	1
		5.5.2	Include environmental impacts of dams into national planning and improve water supply planning to adequately include down stream water issues	MMEWA	MEWT; WUC	5	12/08	100,000		Water use statistics	1
		5.5.3	Include monitoring of aquatic species, including IAS, in water monitoring programmes (Ref 5.6.2 – Invasive and Alien	MEWT	WUC; DWA; DOF	30	12/08	600,000		Reports	1

No	Strategic target	No	Activity	Lead institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
			Species survey)								
		5.5.4	Implement water release calculations as stated in dam Environmental Impact Assessments	DWA (MMEWA0	MEWT	5	12/08	100,000		Water release reports	1
		5.5.5	Regularly monitor groundwater levels and characteristics	DWA (MMEWA)		480	12/08	9,700,000		Ground water reports	2
		5.5.6	Enforce EIAs in connection with ground water exploration and borehole schemes	MEWT	relevant client institution	TBA	12/08	TBA		EIAs	1
5.6	Effective management of invasive species	5.6.1	Stop government distribution of known IAS through government nurseries	BNTSC; DFREB (MEWT);	NGOs, PS	60	12/08	1,200,000			2
		5.6.2	Survey levels of Invasive Alien Species (IAS) and indigenous invasive species infestation at ecosystem level and publish updates regularly. (Ref 5.5.3 – Aquatic species and 5.8.3 – Bush encroachment)	NHBG (MLHA)	MEWT; NGOs	30	12/06	1,830,000		Reports	1
		5.6.3	Establish database on IAS, including indigenous invasive species and desirable alien organisms, and research the effects of introduction	DAR (MOA)	BCA; FTRS	6	12/06	410,000		Database	1
		5.6.4	Prepare an IAS strategy and policy including classification of IAS and indigenous invasive species and related measures to monitor and control invasive species, with the aim to prevent introduction and spread of IAS, while promoting the use of indigenous species (Ref 6.2)	MEWT	SADC; NHBG; UB; DWA; DWNP; NGOs; MOA	6	12/06	360,000		IAS strategy	1
		5.6.5	Monitor import, export and movement (translocation) of genetic resources with special emphasis on IAS and indigenous invasive species and disease causing agents, and rare and endangered species and ensure effective enforcement of quarantine and phytosanitary controls	MEWT	MEWT; DCE; Police; BDF, DFREB; MOA (PPD)	80	12/08	2,100,000		Import and export statistics	2
		5.6.6	Produce IAS identification guides and relevant information materials for selected target groups, I.e. farmers, tourists etc	ARB (MEWT)	MOA	6	12/06	1,360,000		Guides	1

No	Strategic target	No	Activity	Lead institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
		5.6.7	Put on information campaigns about IAS, especially at borders, airports etc.	MEWT	MOA; DCE	5	12/08	200,000		Campaigns; import and export statistics	2
		5.6.8	Train customs and excise staff in basic identification of IAS, the importance of avoiding introduction of IAS, where to get assistance with identification if in doubt and generally about phytosanitary principles (Ref 4.5.2)	DCE (MFDP)	MEWT; MOA	10	12/08	230,000		No trained staff	2
		5.6.9	Amend legislation to tally with IAS and GMO strategy and regional standards assure that the import permit procedures for genetic material include assessment of IAS identification and prohibition (Ref. 4.3 - Legislation)	MEWT/MOA	AGC; ARB; DCE; NBSC; UB	12	12/08	720,000		Legal framework	1
		5.6.10	If necessary undertake programmes to control IAS, as per 5.6.4	DWA (MEWA/MEWT/MOA	ARB; DCE; DFREB;	TBA	12/08	TBA		IAS control programmes	2
5.7	Water and air pollution levels reduced to reduce biodiversity loss	5.7.1	Study the effects and costs of pollution of biodiversity and value the biodiversity losses and include in cost analysis Ref 3.1.4 – (Environmental audit)	MEWT	UB; DWA; MMEWA; DSWM ; SADC	6	12/06	138,000		cost estimates of BD losses	2
		5.7.2	Develop, and/or refine, implement and enforce pollution standards, to include pollution of air, water and land.	MEWT	MMEWA; BOBS	12	12/08	340,000		Standards; Pollution statistics	2
		5.7.3	Identify sources and root causes of pollution and implement mitigation measures to reduce pollution at source and establish pollution covenants between government and the private sector and enforce the polluter pays principle.	MEWT	MMEWA	6	12/06	220,000		number of poll. Control covenants	2
		5.7.4	Monitor hydrological change and water quality, especially around urban centres and around industries	DWA (MMEWA)	MEWT	60	12/08	1,700,000		Pollution statistics	2
		5.7.5	Investigate and implement wider use of integrated pest management to reduce pesticide use (Ref 3.8.6 – Awareness of farmers)	MOA	DFREB; MEWT	12	12/08	240,000		Pesticide sales	3

No	Strategic target	No	Activity	Lead institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
5.8	Improved understanding of threats to biodiversity	5.8.1	Research the effects of bushfires on different components of biodiversity and identify and implement strategies and training to minimise the negative effects of bushfires and include in fire and land management plans	ARB (MEWT)	NFREB, UB	24	12/06	480,000		Fire statistics; Research reports	2
		5.8.2	Research the effects of large elephant populations on biodiversity and long-term elephant population trends in Botswana	DWNP (MEWT)	MEWT	12	12/06	264,000		Research reports	2
		5.8.3	Review existing information, and if necessary continue research into the effects and management of bush encroachment, over-grazing and over stocking on rangelands	MOA/Indigenous vegetation project/BRIMP	UB; MEWT	TBA	12/08	TBA		Bush encroachment statistics and management tools	1
		5.8.4	Review existing information and continue investigation and research into potential and new threats to biodiversity in Botswana	MEWT	UB; Relevant institutions	TBA	12/08	TBA		Published research	2

Objective 6: Raised public awareness and appreciation of biodiversity together with active public participation in biodiversity related activities and decision-making processes

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
6.1	Raised public awareness about the value of and need to conserve Botswana's biodiversity, related indigenous knowledge and traditional practices, and related policies	6.1.1	Develop and implement a national biodiversity awareness and advocacy strategy aimed at all levels of society (Ref. 11.1.3 – Specific high level BSAP awareness)	MEWT	MOA; NMAG; UB; MOA; MCST; MOE; NGOs; CBOs; Schools & colleges	6	12/08	220,000		Plan of action; Workshops; Broadcasts; Information materials	1
		6.1.2	Continue dissemination of existing biodiversity and CBD information material and, if necessary, develop new training and information materials in appropriate languages, using a variety of media	MEWT	MOE; MCST	12	12/05	290,000		Training materials	2
		6.1.3	Incorporate biodiversity awareness (the importance of maintaining biodiversity and related indigenous knowledge such as traditional and cultural practices, such as taboos, totems in the national curriculum at all education levels and develop appropriate teaching aids	MOE	Regional education Office, teachers; MEWT; NGOs; CBOs	36	12/08	720,000		Curricula; Text books and teaching aids	2
		6.1.4	Establish biodiversity/environmental information centres in each district, linking with museums and NGOs as appropriate	MEWT	NMAG; NGOs; MEWT; PS	240	12/08	14,800,000		Biodiversity information centres	3
		6.1.5	Encourage regular community skill transfer workshops on indigenous knowledge and traditional practices	NMAG (MLHA)	NGOs; MEWT;	20	12/08	410,000		Workshop proceedings	1
		6.1.6	Within the botanical gardens establish medicinal plant gardens to encourage further development of knowledge and skills associated with the local use of medicinal plants	NMAG (MLHA)	NHBG; Natural Healers	12	12/08	100,000		Medicinal display	2
6.2	Promotion and priority given to use of indigenous species in public places and in habitat restoration programmes	6.2.1	Government nurseries to focus on propagation and distribution of indigenous species wherever possible	BNTSC	MEWT	NA	12/08	100,000		Production and sales figures	1

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
		6.2.2	Active promotion of the use of indigenous flora in habitat restoration programmes, around public buildings and Council managed areas (Ref. 2.7 - Restoration).	MEWT	All GoB institution	5	12/08	120,000		Public green spaces	3
		6.2.3	Encourage domestication, breeding and propagation of indigenous species with horticultural potential	ARB (MEWT)	MOA, NHBG; BNTSC; PS; NGOs	480	08/12	9,600,000		Production and sales figures	3
6.3	Quality of life and appreciation of biodiversity enhanced through increased access to green recreational areas	6.3.1	Strengthen the link between biodiversity conservation and poverty alleviation schemes (Ref 3.3.3 – Poverty alleviation)	MEWT	MFDP; CBOs, MOA	2	12/06	40,000		Poverty project documents	2
		6.3.2	Encourage development and maintenance of parks and green areas in and around urban centres and other settlements	MEWT	TC; DTRP; MLHA	5	12/08	150,000		Green area	3
		6.3.3	Establish smaller botanical gardens in urban areas other than Gaborone, for recreation and education and link with school market gardens and urban and village vegetable plots	NMAG (MLHA)	PS, MEWT, MOE;MLHA	360	12/08	8,200,000		No of botanical gardens	3
6.4	Enhanced participation by community, civil society, including youth in biodiversity related activities	6.4.1	Review existing biodiversity programme and identify current and potential role of communities and NGOs in biodiversity conservation (Ref 3.3.1 – Diversification of CBNRM)	MEWT	NCSA, DWNP; MLHA and ARB	2	2004	40,000		Biodiversity guidelines for CBNRM; Report	1
		6.4.2	Amend and approve CBNRM policy and initiate implementation	Parliament	NGOs; MEWT; ARB; MOA	2	12/05	40,000		CBNRM policy; implementation plan	1
		6.4.3	Prepare and publish CBNRM manual	CBNRM Forum	MEWT; NGOS; BOS; Com	4	12/06	90,000		Cinema Manual	2
		6.4.4	Review African experiences on programmes to encourage active youth participation in biodiversity related activities and transfer of traditional knowledge.	DCY & DYA (MLHA)	DCY & DYA (MLHA); NGOs; MEWT	2	12/06				2
		6.4.5	Initiate a national programme to encourage youth participation in biodiversity, including agrobiodiversity, conservation activities	DCY & DYA (MLHA)	MOE; Schools; Tertiary institutions; NGOs; CBOs	10	12/08	230,000		Youth project statistics	2
6.5	Gender issues mainstreamed into the biodiversity planning framework to enhance participation	6.5.1	Evaluate gender access and ownership of natural resources with regards to the current institutional and policy environment, with the aim of addressing gaps or inequalities in national policy	WAD (MLHA)	NGOs; MEWT; BIDPA	2	12/06	120,000		Policy report	3

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
		6.5.2	Improve women's access to credit facilities in order to utilize natural resources such as veld products and medicinal plants	WAD (MLHA)	; BEDIA; MFDP	TBA	12/08	TBA		Credit statistics	3

Objective 7: Fair access to biological resources and equitable sharing of benefits arising from the use of biological resources

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
7.1	Fair access to biological resources and benefit sharing	7.1.1	Develop Access and Benefit Sharing (ABS) strategy, policy and mechanisms for distribution of benefits and include international transfer of genetic resources and related knowledge. While waiting for the ABS strategy ensure that all genetic materials sent out of the country are accompanied by relevant Memoranda of Understanding (MOUs) and Material Transfer Agreements (MTA)	MEWT	AGC; MTI; NGOs; PS; MCST	6	12/05	360,000		ABS	1
		7.1.2	Establish guidelines for access to biodiversity, benefit sharing and prospecting	MEWT	MCST; UB	1	12/05	60,000		ABS Guidelines	1
		7.1.3	Provide legislative and regulatory framework on access to biodiversity, taking regional experiences into consideration	MEWT	MEWT; AGC MLG; MLH; DWNP; TA; Traditional healers; NGOs, CBOs; PS; UB; MCST, MTI	24	12/08	480,000		Legal framework	1
		7.1.4	Ensure that all transfers of genetic resources are in line with the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture and other applicable international and regional agreements and standards	MEWT	MFDP, DCE; UB	120	12/08	2,400,000		Transfer permits, Customs statistics	1
7.2	Access to biodiversity linked to responsibility for sustainable management	7.2.1	Ensure access to resources and responsibility for sustainable development is covered in Veldproduct Policy (to be developed - Ref. 3.9.1)	ARB (MEWT)	MEWT; NGOs; Com	1	12/04	20,000		Veldproduct policy	1
		7.2.2	Active follow-up on EIAs to ensure that mitigation activities are carried out satisfactorily (Ref 5.4.3 enforcement)	MEWT	PS; All concerned ministries	TBA	12/08			EIA + developments	2
		7.2.3	Introduce resource access with responsibility for monitoring of resources (Ref. 1.3.7 – User based monitoring)	MEWT	ARB; NGOs, CBOs	12	12/06	720,000		Access permits	2

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
7.3	Legal protection of innovations associated with genetic resources, local knowledge and skills improved	7.3.1	Develop a blueprint on protection of intellectual property rights including indigenous knowledge adopting OAU model law on IPR and Indigenous Knowledge (Ref 7.1.3 – Access legislation)	MEWT	MEWT; NMAG; MLG; MLH; DWNP; TA; Traditional healers; NGOs, CBOs; PS; UB; MCST; Communities	24	12/08	480,000		Legal framework; Policies and legislation related to Indigenous Knowledge	1
		7.3.2	Develop a national policy framework on Indigenous Knowledge with special provision for traditional medicine research and use (Ref 10.5 – regional trade)	MOH	MLH; MLG; Traditional healers; AGC; MTI	12	12/06	720,000		Traditional medicine framework	2
		7.3.3	Make Access and Benefit Sharing Agreement guidelines and templates easily available and promote joint ventures which are beneficial to the country and individuals	MEWT	MEWT; AGC; MTI; UB; Funding organisation	2	12/05	120,000		ABS templates	2
		7.3.4	Document trade data on biological resources and their products to establish trade flows	MTI	DCE; CSO	10	12/08	220,000		Trade statistics	2
		7.3.5	Adopt OAU model law on IPR and Indigenous knowledge	Parliament	AGS; MEWT	6	12/05	NA		Legal framework	1

Objective 8: Safe industrial and technological development and other services based on national biodiversity resources for future prosperity

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
8.1	Increased capacity in dealing with biotechnology and biosafety	8.1.1	Develop institutional structures, ensuring regional harmonization, which will assure safe use of biotechnology in Botswana, including physical containment facilities, and institutionalising regulation approach, i.e. implementation of the Biosafety Framework	NBSF/DAR (MOA)	NBSC; MOA; MCST; MEWT	6	12/06	120,000	Organogram	2
		8.1.2	Assess government training needs for implementation of the National Biosafety Framework and develop strategy to address needs assessment results	NBSF/DAR (MOA)		6	12/07	360,000	Consultancy report	2
		8.1.3	Expand present information technology use in Government institutions to assure the regulatory personnel have access to the latest information on emerging biotechnology use and risks	MEWT	CHM, BCB	3	12/06	4,060,000	Internet access in government; computers	3
		8.1.4	Develop a biosafety clearing house with up to date biosafety information relevant to the Botswana situation and make it available on the World Wide Web	MOA	MEWT; CHM	6	12/06	220,000	Biosafety Clearing House Mechanism	2
		8.1.5	Estimate and develop capacity in biotechnology related fields, including legal issues, and implement training programme accordingly	NBSC/DAR (MOA)	MOE; UB, MCST	TBA	12/08	TBA	MOE training statistics	3
		8.1.6	Establish Biotechnology and Biosafety Expert Reference Group to provide technical backstopping for regulatory staff in Risk Analysis and Management activities, with membership reviewed biannually and adjusted as necessary	NBSC/DAR (MOA)	Relevant institutions; PS; UB	0.5	12/06	NA	Biosafety reference group	2
		8.1.7	Carry out training programmes on biosafety for Customs officials, the police and other stakeholders	NBSC/DAR (MOA)	MEWT; DCE; Police	5	12/08	100,005	No courses and participants	3
8.2	Safe use of biotechnologies ensured in Botswana	8.2.1	Finalise and implement biosafety framework	NBSC DAR (MOA)	MOA;UB, MFDP, BOCONGO, BOCOBONET, BOCCIM, DAR, NCSA; MoH, NAFTAC, DCE, AGC, MEWT	60	12/08	1,200,000	National Biosafety Framework	1
		8.2.2	Develop and adopt the policy and legal instruments to support the biosafety framework	NBSC (MOA)	AGC, MoA, UB, MFDP, NGOs BOCCIM, DAR, NCSA; MoH, NAFTAC, DCE,	60	12/08	3,600,000	Legal and policy framework	2

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
					MEWT					
		8.2.3	Develop and implement technical guidelines and procedures to control handling and the transboundary movement of genetically modified organisms (GMOs) and their products	NBSC (MOA)	AGC, MoA, UB, MFDP, NGOs, MoA DAR, MEWT; MoH, NAFTAC, MFDP DCE	3	12/06	180,000	Technical guidelines and procedures; Customs reports	1
8.3	Raised biosafety and biotechnology awareness	8.3.1	Develop public and political awareness programmes on biosafety and biotechnology for various sectors	NBSC (MOA)	MCST, MLG; Media, UB, MFDP, NGOs, BOCCIM, NCSA; MoH, NAFTAC, DCE, MEWT	36	06/07	770,000	Campaign programmes and feedback	2
		8.3.2	Integrate biosafety and biotechnology studies into curricula both at secondary and tertiary centres of learning	MOE	NBSC; UB, BCA, MEWT; MFDP	72	12/14	4,320,000	Curricula; Textbooks	2
		8.3.3	Assess national training needs in the field of biotechnology and biosafety and establish specialist capacity	NBSC (MOA)	MOA; MEWT; UB; Relevant institutions	6	12/05	360,000	Report	2
8.4	Bio-prospecting and citizen-based innovation encouraged through creation of an enabling environment	8.4.1	Improve national and local capacity to participate and benefit from bio trade by encouraging the formation of user groups and by providing communities with appropriate training	MTI	CBNRM, CBO, NGOs, BEDIA,BOCCIM; DCE	10	12/08	200,000	Training reports	2
		8.4.2	Ensure that new legal framework addressing genetic resources, while providing the necessary safety regulatory framework does not stifle bona fide research and bio prospecting enterprises unnecessarily. This can be achieved through extensive consultation with all concerned groups in connection with updating of the legal framework	AGC	MTI, MCST; MEWT; PS, UB, NGOs; CBNRM, CBOs	10	12/07	200,000	Consultation reports	2
		8.4.3	Carry out feasibility studies and market surveys for biodiversity and biotechnology based products and production and link with investment opportunities	MTI; NGOs	BEDIA	12	12/06	750,000	Feasibility reports	1
		8.4.4	Promote value added research and sustainable trade in genetic resources through education campaigns and financial incentives	MTI/MCST	MOE; UB, PS, CBNRM, CBO, NGOs; ;MTI, MEWT; ARB; OoP;IFS, MEWT, Enterprise Botswana	15	12/08	350,000	Trade statistics	2
		8.4.5	Ensure that the standards, regulatory processes and legal framework are compatible with regional and international biosafety regulations	NBSF/DAR (MOA)	SADC; AGC; MEWT	5	12-Aug		Regional and national regulatory frameworks	1

Objective 9: Improved availability and access to biodiversity data and information, and promotion of exchange of information

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
9.1	National standards established and disseminated to relevant groups for biodiversity data collection, including for metadata	9.1.1	Establish national data collection and meta-data standards, that are regionally compatible and comply with accepted international standards, and based on standards design and produce data collection forms (Ref 1.1.2)	Key focal institutions; MEWT	CSO; Key focal institutions; UB; BOBS	12	12/05	720,000		Set of standards; Data forms	1
9.2	Key inventories computerised and meta data established	9.2.1	Computerise selected national inventories to be included in Biodiversity CHM (Ref 9.3.2)	Relevant focal institutions	BOBS; MEWT	36	12/08	760,000		Databases	3
		9.2.2	Establish institutional responsibilities for maintenance of data and databases	MEWT	Key focal institutions	1	12/05	20,000		Date of update	1
		9.2.3	Establish metadata guidelines and disseminated information and data forms to data collectors	MEWT	CSO, BOBS, BIMEDA	1	12/05	70,000		Meta data guidelines	1
		9.3.4	Metadata collected for all national biodiversity datasets and included in CHM (Ref 9.3.2 - CHM)	MEWT	Relevant data providers	6	12/08	120,000		CHM	2
9.3	Easy access to environmental, biodiversity, social and economic data	9.3.1	Link biodiversity focal point institutions with the responsibility for hosting relevant data collections.	MEWT	Key focal institutions	NA	12/08	NA		Agreements	2
		9.3.2	Establish biodiversity CHM in accordance with recommendations made by the CHM working group, and acquire the necessary hardware and software	MEWT	CHM Working Group	12	12/05	340,000		CHM	1
		9.3.3	Establish links between national data sets and the CHM through agreements with the data provider.	MEWT	Key focal institutions	2	12/08	NA		Agreements	1
		9.3.4	Establish a database of literature on biodiversity including “grey literature” and with keywords to facilitate searches in NCSA.	MEWT	UB, NARS; DNLS	18	12/08	410,000		Literature database; Reference library	3
		9.3.5	Publish national checklists for all biodiversity key groups, including Red Data Lists (Ref 2.4.1 - RDL)	Key focal institutions; MEWT		48	12/08	1,560,000		Checklists	3

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
		9.3.6	Establish a biodiversity website.	MEWT, NCSA	DIT, UB, NGOs	9	12/05	100,000		Website launched	2
9.4	Botswana biodiversity research data safe-guarded	9.4.1	Collect research data and reports for which permits have been issued (Ref 1.3.1 – Allocation of research permits)	MSCT	UB; NGOs; MEWT	NA	12/08	NA		Library; Research permit statistic	2
		9.4.2	Establish depository for biodiversity research data and reports (Ref 1.1.1)	MSCT	UB; NGOs; MEWT	1	12/06	20,000		Biodiversity research library (hardcopy and digital)	1
		9.4.3	Make information on ongoing biodiversity research projects available on CHM	MSCT	MEWT; CHM	NA	Annually	NA		CHM	3

Objective 10: Recognition of Botswana's international and regional role with regards to biodiversity

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
10.1	Active participation in international biodiversity meetings and relevant biodiversity related agreements and protocols continually reviewed and signed if appropriate	10.1.1	GoB participating actively in key conventions, such as CBD, UNCCD and CITES	MEWT, MOP, MFAIC	Concerned ministries and institutions	12	12/08	240,000		Trip reports from COPs and technical meetings	1
		10.1.2	Signing of relevant regional and international agreements	Relevant ministries	MEWT	NA	12-Aug	NA		Signed agreements	2
		10.1.3	Develop national consensus ahead of major meetings through thematic expert groups, and public consultation as appropriate	MEWT	Relevant ministries, NGOs; PS, UB	NA	12/08	TBA		Minutes from meetings	2
		10.1.4	Establish funding mechanisms for technical expertise to attend important biodiversity meetings	MEWT	Relevant ministries, Donors	5	12/08	100,000		Back to office reports; meeting minutes	2
		10.1.5	Strengthen national human capacity in environmental law and encourage representation by environmental law experts in government delegations to international meetings	MOE, MEWT	PS	TBA	12/08	TBA		Back to office reports; meeting minutes	1
10.2	Compliance with and efficient implementation of relevant biodiversity related conventions, agreements and treaties	10.2.1	Design and implement a system for monitoring the implementation of international conventions and agreements related to biodiversity, including regular review of progress	MEWT	Implementing institutions	5	06/05	120,000		Monitoring system, Annual reports	1
		10.2.2	Improve mechanisms for effective coordination of commitments and activities related to international agreements, including established lines of communication, to avoid duplication and finding common grounds to make implementation more effective	MEWT	All implementing institutions	10	12/08	230,000		Annual reports	1
		10.2.3	Periodically review all international biodiversity related commitments singed by GoB and assess implementation progress	MEWT	Implementing institutions	5	12/08	100,000		Annual report on implementation	1

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
10.3	Regional and transboundary collaborations enhanced (expertise, markets, resources) and active participation in regional biodiversity networking programmes	10.3.1	Support, as appropriate, the development of bilateral or multilateral agreements and harmonization of policies and legislation within the SADC region on conservation and use of shared or migratory natural resources	MFAIC	MEWT; Implementing institutions;; SADC	TBA	12/08	TBA		List of signed agreements	1
		10.3.2	Work towards the establishment of regional centres of excellence for micro organism and lesser-known organisms research and expertise (Ref 4.4.3 – National Centres of excellence)	MEWT	MMFAIC; Relevant ministries; SADC	TBA	12/08	TBA		Centres of excellence	3
		10.3.3	Strengthen regional cooperation in the area of climate monitoring, drought detection/coping and natural disasters (Ref 5.1.2 – National Early Warning Programmes)	MEWT	DMS; MEWT; SADC; MFAIC	TBA	12/08	TBA		Regional agreements; regional climate models; regional early warning system	1
		10.3.4	Strengthen regional cooperation in the area of natural resource management, including migratory species, river basin planning, transboundary parks	MEWT	SADC, MEWT; MMEWA; NGOs	TBA	12/08	TBA		Signed agreements	1
		10.3.5	Strengthen regional cooperation in the area of biosafety, IAS and phytosanitary controls	MOA	SADC; MEWT; DCE	TBA	12/08	TBA		Signed agreements; regional standards and guidelines	1
		10.3.6	Build and maintain partnerships of biodiversity conservation and environmental management within SADC to promote sharing of information, best practices and expertise in biodiversity management	SADC	MEWT; MOA; MLHA	TBA	12/08	TBA		Regional project documents and reports	2
		10.3.7	Set up regional database of biodiversity expertise and training institutions	SADC	MEWT	3	12/04	80,000		Database	1
		10.3.8	Adopt regional BSAP	MEWT		NA	12/06	TBA		Regional BSAP	3
10.4	Establishment of Botswana at the forefront of biodiversity management and conservation in the region	10.4.1	Adopt the highest standards of biodiversity management	MEWT	Relevant institutions; BOBS; DCE	NA	12/08	NA		Regional standards	2
		10.4.2	Provide direction and leadership in biodiversity management in the region	MEWT	Relevant institutions; MFAIC	NA	12/08	NA		Regional standards; minutes	3
10.5	Pro-active role in globalisation including bio trade and	10.5.1	Encourage ABS partnerships through an enabling environment	AGC; MEWT	PS; CBNRM	TBA	12/08	TBA		ABS agreements	3

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost		Sources of verification	Priority (1-3)
	biotechnology										
		10.5.2	Participate actively in international biotechnology and biotrade initiatives	NBS/DAR (MOA)	MEWT	TBA	12/08	TBA		Proceedings and reports	3

Objective 11: Implementation of this Biodiversity Strategy and Action Plan

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
11.1	Political will and coherent government approach to implementation of BSAP established	11.1.1	Preparation of Government white paper on biodiversity based on BSAP	MEWT		2	06/05	120,000	White paper	1
		11.1.2	Prepare and hold high level (directors' level and up) BSAP seminar and technical level seminars for line ministries	MEWT	All ministries	1	12/04	60,000	Seminar proceedings	1
		11.1.3	Design a BSAP awareness raising campaign aimed at senior management and at political level to continue building support for implementation of BSAP	MEWT	MCST	6	01/05	120,000	Campaign outline; information materials	2
		11.1.4	Publicize the BSAP through public relations (PR) campaign in local languages, in line with Vision 2016 and the Education Policy.	MEWT	BTV, Media; District extension teams; MCST	6	06/05	220,000	Campaign outline; articles; broadcasts; information materials	2
11.2	Institutional resources for the coordination of the implementation of the BSAP enhanced	11.2.1	Establish 5 year budget for BSAP implementing unit and secure funding	MEWT	MFDP	2	12/04	40,000	Budget; Committed funds	1
		11.2.2	Make BSAP coordination and implementation office operational by providing offices and appointing 1 project manager + 1 assistant	MEWT		144	12/08	586,000 pa	BSAP office	1
		11.2.3	Prepare ToRs and workplan for BSAP coordination unit and define roles and responsibilities for effective implementation	MEWT		1	12/04	20,000	ToRs	1
		11.2.4	When the national BSAP unit is established , assign and allocate officers at district and sub-district levels for the implementation of the BSAP	MEWT	DA; MFDP	TBA	12/04	TBA	MEWT organogram	1
11.3	Components of BSAP streamlined into national development planning and budgeting processes	11.3.1	BSAP coordinating unit to sort BSAP activities according to key ministries or key players, and national and district implementation levels	MEWT	NCSA	1	03/05	20,000	List of activities and responsibilities by ministry	1

No	Strategic target	No	Activity	Lead Institution	Key partners	Duration (months)	Deadline	Estimated Cost	Sources of verification	Priority (1-3)
		11.3.2	Distribute BSAP to all lead agencies and key partners and to inform them of their responsibilities and establish communication links	MEWT	NCSA	0.5	04/05	10,000	Distribution list	1
		11.3.3	Monitor implementation of the national BSAP on a yearly basis, evaluate the results and make necessary adjustments	MEWT	NCSA; participating institutions	6	12/08	120,000	Evaluation Report	2
		11.3.4	Update BSAP for the next NDP period, taking District BSAPs into consideration (Ref – 2.1 District BSAPs)	MEWT	NCSA; participating institutions	2	12/08	40,000	Revised BSAP	3
11.4	Sustainable financial provisions for implementation of the BSAP ensured	11.4.1	Review existing financing mechanisms and prepare funding strategy for BSAP related projects	MEWT	MFDP; Donors; PS; NGOs	1	12/04	40,000	List of funding; funding strategy	1
		11.4.2	Relevant ministries to prepare detailed BSAP budgets and ensure that BSAP activities are included in NDP9 mid-term review and preparations for NDP 10 as appropriate	All concerned ministries		NA	12/06 & 06/09	NA	Ministerial budgets, NDP10	1
		11.4.3	Strengthen existing biodiversity financing mechanisms if necessary, communicate national biodiversity and environment priorities to external donors, and proactively seek funding for BSAP projects	MEWT, MFDP	Donors; PS	1	12/05	20,000	External funding	2
		11.4.4	Update and revise estimates of required financing	MEWT		2	12/08	40,000	Revised BSAP budget	3
		11.4.5	Develop guidelines for biodiversity joint ventures including the private sector	MEWT; MTI		1	12/05	20,000	Guidelines	3

REFERENCES

Balding, S. (2003). *Millennium Seed Bank Project, Botswana – Targeting programme: Threatened species*

Barnes,J.I., J.Cannon and K.Morrison, 2001. *Economic returns to selected land use in Ngamiland, Botswana*. Report prepared for Conservation International.

BSAP Outline Report. 2004. Unpublished working document

CBD & UNEP. (2003). *Handbook of the Convention on Biological Diversity*. 2nd edition. ISBN: 92-807-2280-8

Government of Botswana (1990). *Botswana National Conservation Strategy*

Government of Botswana, Environmental Planning Programme. (2001) *Planning for sustainable development in Botswana – Proceedings from high level seminar*, and other various reports.

Government of Botswana, National Action Programme to Combat Desertification and Drought (2003). *Draft National Action Plan to Combat Drought and Desertification*

IUCN (1994). *Guidelines for Protected Areas Management Categories.* IUCN, Cambridge, UK and Gland, Switzerland. 261pp

Mathodi, S. M. In DAR (1992). *Proceedings of the First National Workshop on Plant genetic resources, held at the Gaborone Sun Hotel, Gaborone, 24-26 Jun*e: ed: Mathodi, S. Mazhani, L. M., Dipholo, D.K., and B.J. Hargreaves

McNeely, J. A, (1988), *Economics And Biological Diversity; Developing and Using Economic Incentives to Conserve Biological Resources*. IUCN, Gland, Switzerland

MEWT, Government of Botswana. (2003). *BSAP Stocktaking Report - Final draft*. Prepared by IUCN and Ecosurv

Miller, Kenton R. and Steven M. Lanou. (1995). *National Biodiversity Planning: Guidelines Based on Early Experiences Around the World*. World Resources Institute, United Nations Environment Programme and The World Conservation Union. Washington D.C. Nairobi, Gland, Switzerland.

Naeem, S. (2004). How biodiversity loss affects the health of ecosystems. Biodiversity News, Science and Development Network. http://www.scidev.net/index.cfm NCSA, Government of Botswana. (2002) *Environmental keynote paper for national development plan IX*

National CBNRM Forum in Botswana. 2004. Proceedings of the Third National CBNRM Conference in Botswana 25th – 26th of November and the CBNRM Status report 2003

NCSA, Government of Botswana. (2002) *State of the Environment draft report.*

NCSA. Government of Botswana. (1998*). National Conservation Strategy (NCS) Action Plan Consultancy Report*

Prescott J., Gauthier B. and J. Nagahuedi Mbongu Sodi. (2000). *Guide to Developing a Biodiversity Strategy from a Sustainable Development Perspective.* Institut de l'Énergie et de l'Énvironment de la Francophonie (IEPF), Ministère de L'Environnement dy Quebec, United Nations Development Programme (UNDP), United Nations Environment Programme (UNEP), Quebec, Canada

Presidential task group for a long term vision for Botswana (1997). *Towards Prosperity for all - Vision 2016*.

Ringrose, S., Vanderpost, C., Kwerepe, R., and M. Mulalu. 1997. ODA Commissioned Joint Project: Remote Sensing/Range Ecology, Ministry of Agriculture and Environmental Science, University of Botswana

Rozemeijer, N. 2003. An overview of the current status of and progress made in CBNRM in Botswana (October 2003). Background paper for the Third CBNRM Conference, Gaborone.

Smith RD and Maltby. (2003). *Using the Ecosystem Approach to implement the Convention on Biological Diversity: Key Issues and Case Studies*. IUCN, Gland, Switzerland and Cambridge, UK+ 118pp.

Van Rooyen, N. 2001. *Flowering plant of the Kalahari dunes*. Published by Ecotrust cc

World Conservation Monitoring Centre (2000). *Global Biodiversity: Earth's living resources in the 21st century*. By Groombridge, B and Jenkings, M.D. World Conservation Press, Cambridge, UK. pp 246

Personal communication:
Department of Meteorological Services, Botswana. 2003

ANNEXES

ANNEX 1: EXTRACT FROM BIODIVERSITY STOCKTAKE REPORT – THREATS TO BIODIVERSITY

Listed below are some of the threats to Botswana's biodiversity. They vary in severity and they affect different groups of biodiversity, but they have in common that they are detrimental to biodiversity in one form or another. These threats have been grouped according to the types of effort that is needed to counter-act the threats. Threats specific to flora, fauna and agrobiodiversity sectors can be found in the MEWT, 2004. BSAP Stocktake Report.

Conservation and Sustainable Use
Biodiversity protection not complete
Climate change
Competition between livestock and wildlife for scarce graze and water resources
Construction of roads, dams, and infrastructure
Cross breeding
Destructive harvesting methods
Drought/moisture deficiency
Erosion (wind, water)
Ground water extraction
High elephant levels
High livestock levels - overgrazing
High water abstraction for agriculture leading to salinisation of groundwater and surface water
HIV AIDS leading to loss of manpower
Hunting/logging
Ineffective resource allocation/quotas
Introduction of AIS (micro organisms by tourists)
Introduction of AIS, pests and diseases
Introduction of GMOs
Livestock invasions in protected areas
Logging
Mine pollution
Mining
No management of veldproduct
Noise and light pollution from tourism activities
Over harvesting
Over population around urban centres and settlements
Physical pressure around urban areas and settlements
Population pressure from tourism
Publication of botanical national monuments
Retracting water resources
Roaming livestock
Sand mining
Spread of noxious weeds
Surface water extraction

Tourism infrastructure
Unsustainable use of other resources (water, firewood)
Use of pesticides
Veterinary pests and diseases
Wildlife invasion into farm areas

Policies and Incentives measures
Acid rain
Agricultural subsidies
Bias toward exotic seeds by seed sector
Biodiversity concerns not routinely incorporated in planning
Car fumes
Commercialisation of biodiversity
Conversion to agriculture
Distribution and sale of AIS plant species by government
Fencing
High firewood demand and collection around settlements
Holistic approach missing in Government – little coordination between ministries
Increasing global/regional markets for medicinal plants
Lack of AIS policy
Lack of alternative livelihoods
Lack of Forestry policy
Lack of gazetted wetlands policy
Lack of GMO policy
Lack of resource markets in Botswana
Lack of Veldproducts policy
Limited money from tourism reaching local communities
Loss of rural labour
Low interest by youth in agriculture
Planning and policy gaps
Poor implementation of some international agreements
Resource costs are underestimated
Resource value is under estimated
Strong culture of mono sector planning with agriculture and wildlife being favoured
Unavailability of traditional agricultural varieties

Identification, Monitoring, Research and Training
Analysis of species population trends missing
Basic biodiversity data and research missing
Change from traditional to modern lifestyle
Flooding
Human/wildlife conflict
Introduction of aquatic weeds
Lack of detailed data on faunal distribution (except avian and Artlydatalid species
Lack of game bird, monitoring, assessment of bag limits and hunting season ban

Loss of indigenous knowledge
Natural disasters
No IAS survey
No national plant survey
No survey of micro organisms
Poor resource base monitoring
Red Data List plant species are data deficient
Temperature increases
Unavailability of national biodiversity data
Veld fires

Public Education and Awareness
Increased littering
Increased use of water
Increased waste levels
Lack of participation by civil society in biodiversity issues
Low level of biodiversity awareness
Low public awareness of the risks associated with import and export of genetic resources
Poor waste management practices
Tourism - importation of AIS, disease
Vandalism of species and habitats

Institutional Resources
Biodiversity fragmented between several ministries leading and poor coordination
Customs officials not familiar with CITES species and risks associated with import/export of biodiversity
Lack of Biodiversity Strate**gy**
No functional Land Area Advisory Committee for protected areas outside Chobe
Pouching of wildlife

Legal, Access and Benefit Sharing
Access and benefit sharing instruments missing
Collections of rare species/eggs
Import and export of genetic resources poorly covered by laws
Ineffective CITES legislation for RDL plants
Lack of ratification of the CMS and African-Eurasian Waterbird Agreement
Legal framework generally inadequate
Legal framework not in line with region
Little control of biodiversity export
Poor enactment of legislation

ANNEX 2 - BSAP CONSULTATION WORKSHOPS – SUMMARY

Prepared by IUCN Botswana and NCSA

A total of 7 workshops addressing 10 districts were held throughout the country. Although these workshops were focused on seeking participants' inputs into the BSAP Outline we realized after the first workshop that it was necessary to provide an overview of the CBD, the NSAP Project and revisit some of the stocktaking issues. This was done to provide the workshop participants with enough background to comment on the BSAP Outline and make suggestions on the Action Plan required. Workshop participants were divided into groups and asked to look at the strategic goals that are of priority to their districts and provide their comments as well as suggest the actions required to address the objectives in the outline.

This report begins with a summary of the recommendations drawn from the consultative workshops followed by recommended action plan from each of the workshops.

Workshop Recommendations:

- The participants observed that although programmes for biodiversity conservation exist, there needs to be some economic gains from these conservation activities otherwise people will not conserve biodiversity. They therefore felt that there is a need to boost and regulate trade (especially cross border trade) in natural resources. The following recommendations were made;
    - the permit system in the country needs to be strengthened.
    - Central to the trade issue was the capacity to add value to natural resources in order for traders to benefit more. Undervaluing natural resources was said to force people into increasing harvests in order to get more money. So if the government can help with the valuation this would mean that people will get enough from the little they harvest and they would not need to harvest a lot and thus result in conservation of resources.
    - Furthermore, if value adding industries were to be situated in Botswana then this would restrict the amount of raw materials leaving the country examples being unprocessed Sengaparile (*Harpagophytum procumbens*). The workshop participants appreciated the fact that in order to do this there is a need for appropriate technology and skills which may not be available in the country.
    - Participants recommended establishment of 'smart partnerships' with companies/interested manufacturers with the know - how so that these are located in Botswana and can employ Batswana and transfer skills in the process.
    - They also mentioned the problem of finance in the development of product processing industries by small business people. They recommended that the government should encourage Batswana and especially CBOs to set up game ranches by providing funding to interested parties.

- Linked to the above discussion were issues of biopiracy and control of the movement of natural resources in order to control alien invasive species. The following recommendation was made;
    - The workshops recommended the need for phytosanitary units at border posts and other ports of entry in the country.

- The participants requested that the BSAP should be speeded up so that Batswana can also benefit from their biological resources. They said that it seems as though there are other people who are benefiting from these resources who are not Batswana.

- The participants were concerned that chiefs and other traditional institutions do not a role and enough powers to implement the policies and laws that government introduces. They said that they do not have the authority to control access to biodiversity within their areas. They further argued that local participation in biodiversity conservation needs to be strengthened. The following recommendations were made;

    - Government was urged to implement a law guiding access to biodiversity and that Tribal leaders should be given authority to control access to resources in their areas.
    - Communities need to be educated about the importance of biodiversity and associated threats. In order to do this long-term outreach or extension services need to be provided on a continuous basis.
    - Committees need to be formed at the village level that will educate the community about the importance of biodiversity. They added that there should be programmes that are funded to assist the conservation of biodiversity and for the implementation of i.e. sustainable tourism/ecotourism.
    - The participants expressed concern that youth are not interested in biodiversity conservation which is detrimental to the culture. They urged a cultural revival so that traditional methods of biodiversity conservation could be maintained.
    - for purposes of communicating the biodiversity related issues and raising public awareness, the participants recommended that discussions and materials used should be translated into Setswana and other local languages.
    - More vigorous campaigns are needed in order to educate people and raise awareness about alien invasive species.

- The participants were also concerned that the Government was also contributing to the loss of biodiversity by using exotic breeds to 'improve' local breeds. They said that this would lead to the eventual loss of traditional Tswana breeds and the eventual loss of biodiversity. They therefore recommended that;
    - Government should have programmes that promote the conservation of traditional agro-biodiversity.
- The participants acknowledged the importance of indigenous knowledge systems and its role in biodiversity conservation and management. The following recommendation were made;
    - Research needs to be carried out in order to capture and document indigenous knowledge and management systems for the benefit of future generations to come.
    - Some of the workshop participants raised concern about sharing their local/traditional/indigenous knowledge fearing that they will stand to benefit nothing while researchers get financial benefits from the use of such knowledge. They therefore recommended that policies be put in place to outline issues of access and benefit sharing as well as protection of traditional knowledge.
    - The participants suggested that places in the country that still have cultural practices that are in tact should be profiled so that other communities can learn from them how to revive useful traditional practices and involve the youth.
    - Participants recommended that where permit systems are introduced they need to take into account the socio-economic impacts of those that is to look at how the livelihoods of the harvesters will be affected.
    - The participants recommended that cultural education should be included in the curriculum.

- Participants raised concern that it seems as if most of Governments funding efforts are going to HIV/AIDS related issues and stated that efforts to maintain a healthy environment need to be strengthened. The following recommendations were made;
    - Government should commit more funds for purposes of biodiversity conservation.
    - Government departments should be mindful of biodiversity issues so as to ensure that the projects they are promoting or implementing are not threatening biodiversity conservation. i.e. the Forestry Department needs to promote planting of indigenous trees through tree planting campaigns.

- Law enforcement agencies and customs agents need to be educated on alien invasive species so as to prohibit the entry of these into the country.

ANNEX 3 – CBD GOALS AND TARGETS

CBD 2010 Focal areas, goals and target

The Conference of the Parties has developed a framework to enhance the evaluation of achievements and progress in the implementation of the Strategic Plan and its 2010 Biodiversity Target (paragraph 1 of decision VII/30). This framework includes the following focal areas

(a) Reducing the rate of loss of the components of biodiversity, including: (i) biomes, habitats and ecosystems; (ii) species and populations; and (iii) genetic diversity;
(b) Promoting sustainable use of biodiversity;

(c) Addressing the major threats to biodiversity, including those arising from invasive alien species, climate change, pollution, and habitat change;
(d) Maintaining ecosystem integrity, and the provision of goods and services provided by biodiversity in ecosystems, in support of human well-being;
(e) Protecting traditional knowledge, innovations and practices;

(f) Ensuring the fair and equitable sharing of benefits arising out of the use of genetic resources; and
(g) Mobilizing financial and technical resources, especially for developing countries, in particular least developed countries and small island developing States among them, and countries with economies in transition, for implementing the Convention and the Strategic Plan.

GLOBAL STRATEGY FOR PLANT CONSERVATION TARGETS

1. The global targets for the year 2010 are as follows:

    a. Understanding and documenting plant diversity:

        (i) A widely accessible working list of known plant species, as a step towards a complete world flora;

        (ii) A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels;

        (iii) Development of models with protocols for plant conservation and sustainable use, based on research and practical experience;

    b. Conserving plant diversity:

        (iv) At least 10 per cent of each of the world's ecological regions effectively conserved;

        (v) Protection of 50 per cent of the most important areas for plant diversity assured;

        (vi) At least 30 per cent of production lands managed consistent with the conservation of plant diversity;

        (vii) 60 per cent of the world's threatened species conserved in situ;

        (viii) 60 per cent of threatened plant species in accessible *ex situ* collections, preferably in the country of origin, and 10 per cent of them included in recovery and restoration programmes;

        (ix) 70 per cent of the genetic diversity of crops and other major socio-economically valuable plant species conserved, and associated indigenous and local knowledge maintained;

        (x) Management plans in place for at least 100 major alien species that threaten plants, plant communities and associated habitats and ecosystems;

    c. Using plant diversity sustainably:

        (xi) No species of wild flora endangered by international trade;

        (xii) 30 per cent of plant-based products derived from sources that are sustainably managed;

        (xiii) The decline of plant resources, and associated indigenous and local knowledge, innovations and practices that support sustainable livelihoods, local food security and health care, halted;

    d. Promoting education and awareness about plant diversity:

(xiv) The importance of plant diversity and the need for its conservation incorporated into communication, educational and public-awareness programmes;

e. Building capacity for the conservation of plant diversity:

(xv) The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this Strategy;

(xvi) Networks for plant conservation activities established or strengthened at national, regional and international levels.

2. These targets provide a framework for policy formulation and a basis for monitoring. National targets developed within this framework may vary from country to country, according to national priorities and capacities taking into account differences in plant diversity.

CBD 2010 goals and sub –targets, and how they relate to Botswana BSAP

The tables below contain the CBD goals and sub-targets, and lists the Botswana BSAP objectives and strategic targets that directly or indirectly address the specific goals and targets.

Focal Area: Protect the components of biodiversity

No.	Target	BSAP Objectives and Strategic targets
Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes		Objective 2
1.1	At least 10% of each of the world's ecological regions effectively conserved.	2,2 2.3 2.7 2.9 4.8
1.2	Areas of particular importance to biodiversity protected	2.1 2.2 2.3 2.9 4.8
Goal 2. Promote the conservation of species diversity		Objectives 2 and 3
2.1	Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups	2.2 2.4 2.5 2.6 2.7 2.8 2.9
2.1	Status of threatened species improved.	2.4 2.5 2.6
Goal 3. Promote the conservation of genetic diversity		Objective 2

No.	Target	BSAP Objectives and Strategic targets
3.1	Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.	2.5

Focal Area: Promote sustainable use

No.	Target	BSAP Strategic targets
Goal 4. Promote sustainable use and consumption		Objective 3 and 5
4.1	Biodiversity-based products derived from sources that are sustainably managed, and Production areas managed consistent with the conservation of biodiversity.	2.6 2.8 2.3 3.4 3.5 3.7 3.8 3.9
4.2	Unsustainable consumption, of biological resources, or that impacts upon biodiversity, reduced	3.4 3.5 3.7 3.8 3.9
4.3	No species of wild flora or fauna endangered by international trade	3.8 3.9 4.3

Focal Area: Address threats to biodiversity

No.	Target	BSAP Strategic targets
Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced		Objective 5
5.1	Rate of loss and degradation of natural habitats decreased	3.1 3.2 3.3 3.5 3.6 5.4 5.5
Goal 6. Control threats from invasive alien species		Objective 5
6.1	Pathways for major potential alien invasive species controlled.	5.6
6.2	Management plans in place for major alien species that threaten ecosystems, habitats or species.	4.3 5.6
Goal 7. Address challenges to biodiversity from climate change, and pollution		
7.1	Maintain and enhance resilience of the components of biodiversity to adapt to climate change	5.3
7.2	Reduce pollution and its impacts on biodiversity	5.7

Focal Area: Maintain goods and services from biodiversity to support human well-being

No.	Target	BSAP Strategic targets
Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods		Objectives 2, 4 and 5
8.1	Capacity of ecosystems to deliver goods and services maintained.	Objective 5
8.2	Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained	3.3 6.5

Focal Area: Protect traditional knowledge, innovations and practices

No.	Target	BSAP Strategic targets

Goal 9 Maintain socio-cultural diversity of indigenous and local communities		Objectives 3, 7, 8
9.1	Protect traditional knowledge, innovations and practices	2.10 4.10 6.6 6.7
9.2	Protect the rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefit sharing	4.2 4.3 6.6

Focal Area: Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources

No.	Target	BSAP Strategic targets
Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources		Objectives 7 and 8
10.1	All transfers of genetic resources are in line with the Convention on Biological Diversity, the International Treaty on Plant Genetic Resources for Food and Agriculture and other applicable agreements.	7.1 10.2 10.3
10.2	Benefits arising from the commercial and other utilization of genetic resources shared with the countries providing such resources	6.6 7.3 8.3

Focal Area: Ensure provision of adequate resources

No.	Target	BSAP Strategic targets
Goal 11. Parties have improved financial human, scientific, technical and technological capacity to implement the Convention		Objective 1, 4, 8, 10 and 11
11.1	New and additional financial resources are transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20.	11.4
11.2	Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph 4.	8.3