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FOREWORD BY THE MINISTER

On all continents, and in all oceans, natural warning beacons are starting to flash. Humanity cannot afford to ignore the growing proof of the frequently irreversible erosion of our living environment. The destruction of forests, believed to be home to more than half of all terrestrial species, the shrinking of natural habitats due to population growth and urbanisation, the sharp decline in the numbers of the great wild mammals, and many other danger signs all indicate the urgency of acting now to meet our biodiversity responsibilities – a duty that affects the fate of all.

Our generation is undoubtedly the last to have the ability to stop this destruction of the living environment, and to do so before we cross the threshold of no return, beyond which the very future of humanity could be jeopardised.

We know enough about the decline in biodiversity to start taking steps to reverse it, but we are still not fully aware of all its potential consequences and repercussions for our species. We know very little about the impact of climate change on biodiversity, for example.

Preservation of biodiversity, like the struggle against climate change, requires radical changes in attitudes and lifestyles. This change in attitude and action is a matter of concern to each and every one of us. We will succeed by educating the new generations, by ensuring that information is disseminated to the wider public, and also by encouraging an increasing number of companies to act in a truly sustainable manner.

Our biodiversity heritage is valuable first and foremost in ecological terms, but it also has an economic value that is often underestimated. If intelligently mobilised, it can serve the cause of development and poverty alleviation.

Biodiversity is also an obvious asset for tourism. We must help all implementers keen to promote biodiversity to approach this concept in a spirit of sustainable development.

Given the urgency of the question, we must first of all focus on protection of threatened species and sustainable management of endangered natural environments. We must therefore continue to designate additional protected areas, governed by the rules of conservation, imposing greater or lesser restrictions on human activities. To safeguard parts of our deep marine environment that are particularly rich in biodiversity, the creation of protected areas in light of existing protection mechanisms is also necessary.

To reinforce the protection of our natural heritage, and in keeping with our commitments under the Convention on Biological Diversity, South Africa has designed a National Biodiversity Strategy and Action Plan. This will provide a strong impetus for all our policies aimed at protection and conservation of our valuable biological resources. There was also a national imperative to produce such a strategy and plan of action. Section 24 of the South African Constitution (Act 108 of 1996) notes the human right to have the environment protected. This principle is given effect by the recent promulgation of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) and the National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003). These pieces of legislation build on the White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity, which was published in 1997. In the "way forward" of this Policy, it was envisaged that a priority action of this policy will be to draft an action plan through which detailed implementation strategies can be developed. This will form an essential component of the National Environmental Strategic Action Plan, (renamed the National Biodiversity Strategy and Action Plan).

The time has come for us to tread the path of a humanist ecology. To integrate, in our quest for economic and human progress, an awareness of our duties to nature and our responsibilities to future generations, this National Biodiversity Strategy and Action Plan states as its goal to conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future.

The strategy and action plan is based on the recognition that South Africa is extremely rich in terms of biodiversity, but is also a developing country where the majority of the population lives in poverty. Biodiversity provides numerous benefits to people and to the economy and needs to be conserved and managed to ensure that these benefits can continue. These benefits must also be fairly distributed. Biodiversity must therefore be managed in the context of ensuring equitable benefits to people – both current and future generations.

To achieve this goal, the National Biodiversity Strategy and Action Plan highlights five strategic objectives. A number of outcomes have been identified for each of these strategic objectives, with five-year targets and indicators, and activities to achieve the outcomes, complete with priority, lead agency, support partners and the role of our Department of Environmental Affairs and Tourism.

South Africa played a key role in hosting the 2002 World Summit on Sustainable Development, and is fully committed to achieving the goals and targets of the Johannesburg Plan of Implementation, including the Millennium Development Goals and biodiversity targets, such as reducing the rate of loss of biodiversity by 2010. If implemented effectively, this strategy and action plan can play a significant role in helping us to reach these targets.

Better co-ordination between the different agencies responsible for managing the natural environment will create a veritable force whose aim is to conserve and sustainably utilise our natural resource base, upon which we ultimately depend for our basic needs, survival, and development.

We have the responsibility to ensure that our country becomes and remains a living ark. Our communities must stand as the custodians of conservation and the guarantors of biological diversity.

MARTHINUS VAN SCHALKWYK, MP
MINISTER OF ENVIRONMENTAL AFFAIRS & TOURISM

DIRECTOR-GENERAL'S INTRODUCTION

Biological diversity has since 1992 appeared as one of the most important conceptual developments. It has become part of everyday language but still remains a rather abstract notion to most people. Essentially, it provides a unifying principle which encompasses all genes, species, habitats and ecosystems on earth, thus covering everything from a wild plant's genes to the high seas. This convenient shorthand not only denotes all components of the living world but also the intricate interdependence between them.

This interdependence is the key to the fragile equilibrium of each ecosystem and to the entire biosphere. Man cannot see himself as separate from it. Pressures on the environment are expected to continue to grow and to be further exarcerbated as climate change puts additional stress on the world's productive systems. In this country where preservation of the environment may come into conflict with the crucial requirements of survival, population pressure and development needs, this might lead, in many cases, to the sacrifice of a priceless natural heritage.

Biological diversity is an asset of international, national and local value and significance and functions as an all-embracing concept providing a common frame of reference to be managed according to an integrative strategy and plan of action. The global objective of arresting the decline in biodiversity in 2010, needs a local response to step up the pace of action and truly implement the necessary measures. The NBSAP will go a way towards the attainment of the 2010 target. This means mobilising all the scientific and institutional disciplines concerned which will evidently require a vast programme of national co-operation.

The process to develop the National Biodiversity Strategy and Action Plan was guided by a representative project steering committee and various task teams and consultants working in thematic areas such as conservation, sustainable use, invasive alien species and economic integration and poverty alleviation. An initial stocktaking and assessment phase, or rapid appraisal, noted the underlying causes of biodiversity decline – particularly social, economic and institutional causes. Together with insights gained from various consultations and inputs received from interested stakeholders, ways of ensuring sustainable and equitable use of our rich biological heritage were identified and informed the development of strategic objectives and outcomes. The strategy was further refined in a series of task team workshops, and an implementation plan developed to highlight priority activities, lead agents and partners.

In order to ensure conservation and sustainable use of biodiversity, we need to deal with the root causes of biodiversity loss. These often lie at a systemic level, and will need strong commitment at the highest levels of government. The strategy has a strong focus on mainstreaming and integration, institutional effectiveness, cooperative governance and partnerships. South Africa has achieved remarkable progress in a decade of democracy, but much still needs to be done. The challenges are enormous, and our strategy needs to be implemented through a prioritized set of actions to achieve measurable outcomes.

The National Biodiversity Strategy and Action Plan was intended to provide a framework against which the country's rivers and wetlands, mountains and plains, estuaries and oceans and magnificent coastline and landscapes, upon which the national economy is fundamentally dependent, can be managed.

PAM YAKO
DIRECTOR-GENERAL

IUCN	International Union for the Conservation of Nature (World Conservation Union)
MCM	Marine and Coastal Management Branch of DEAT
MoU	Memorandum of Understanding
MPA	Marine Protected Area
MRC	Medical Research Council
NAFCOB	National African Federated Chamber of Business
NBI	National Botanical Institute (now renamed - see SANBI)
NBSAP	National Biodiversity Strategy and Action Plan
NEDLAC	National Economic Development and Labour Council
NEMA	National Environmental Management Act, 1998 (Act 107 of 1998)
NEMBA	National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)
NEMPAA	National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003)
NEPAD	New Partnership for Africa's Development
NGO	Non Governmental Organisation
NRF	National Research Foundation
NSBA	National Spatial Biodiversity Assessment
NSoER	National State of Environment Report
NSSD	National Strategy for Sustainable Development
PHASA	Professional Hunters Association of South Africa
Ramsar	Convention on Wetlands of International Importance, signed in Ramsar, Iran, in 1971
RDL	Red Data List
SA	South Africa
SACOB	South African Chamber of Business
SADC	Southern African Development Community
SAEON	South African Environmental Observation Network
SAIAB	South African Institute for Aquatic Biodiversity
SALGA	South African Local Government Association
SANAP	South African National Antarctic Programme
SANBI	South African National Biodiversity Institute
SANCOR	South African Network for Coastal and Oceanic Research
SANParks	South African National Parks
SAPS	South African Police Service
SIBIS	SANBI's Integrated Biodiversity Information System
SKEP	Succulent Karoo Ecosystem Programme
SO	Strategic Objective
StatsSA	Statistics South Africa
STEP	Subtropical Thicket Ecosystem Planning
SUAR	Sustainable Utilisation of Agricultural Resources Bill, 2004
THETA	Tourism and Hospitality Education and Training Authority
TFCA	Transfrontier Conservation Area
ToR	Terms of Reference
UCT	University of Cape Town
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WfW	Working for Water Programme
WG1	Working Group 1 of MINTEC, on biodiversity and heritage
WRC	Water Research Commission
WSSD	World Summit on Sustainable Development
WTO	World Trade Organisation
WWF-SA	World Wide Fund for Nature South Africa

1. INTRODUCTION

The National Biodiversity Strategy and Action Plan (NBSAP) sets out a framework and a plan of action for the conservation and sustainable use of South Africa's biological diversity and the equitable sharing of benefits derived from this use. The NBSAP was prepared by the Department of Environmental Affairs and Tourism (DEAT), during the period May 2003 to May 2005.

The NBSAP is supported by a Country Study, which is based on a rapid assessment of South Africa's biodiversity, socio-economic and political context. It provides an overview of key issues, constraints and opportunities identified in the stocktaking and assessment phase.

This document provides the background to the NBSAP process followed in South Africa and an executive summary of the situational assessment (Country Study) that guided the development of the strategy.

The strategy that follows sets out the strategic objectives, outcomes and activities needed to achieve the overarching goals of conservation, sustainable use and equity. An implementation plan sets out high priority activities which are needed to achieve the objectives, including lead agents, partners, targets and indicators. Long-term (15 year) targets have been set for the strategic objectives, while five-year objectives have been set at the outcome level.

South Africa is highly committed to reducing the loss of biodiversity by 2010.

2. BACKGROUND TO THE NBSAP AND THE PROCESS FOLLOWED

South Africa initiated a process to develop a National Biodiversity Strategy and Action Plan in May 2003. The Department of Environmental Affairs and Tourism (DEAT), specifically the Chief Directorate: Biodiversity and Heritage, as the lead agent for implementation of the Convention on Biological Diversity (CBD) and other multilateral environmental agreements, was mandated to manage the process to develop the NBSAP. This process was partly funded by the Global Environment Facility, through a grant administered by the United Nations Development Programme (UNDP). Additional finance was made available by DEAT, while members of the Project Steering Committee and workshop participants covered their own expenses.

The NBSAP is in part a response to an obligation South Africa agreed to by signing and ratifying the Convention on Biological Diversity in 1995. Article 6 of the CBD – General Measures for Conservation and Sustainable Use – calls for the development of national strategies, plans or programmes and the integration of conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

South Africa played a key role in hosting the 2002 World Summit on Sustainable Development, and is highly committed to achieving the goals and targets of the Johannesburg Plan of Implementation, including the Millennium Development Goals and biodiversity targets, such as reducing the rate of loss of biodiversity by 2010. The NBSAP sets out a plan of action to achieve this target.

There is also a national imperative to produce an NBSAP. Section 24 of the South African Constitution (Act 108 of 1996) notes the human right to have the environment protected in ways that ensure conservation and sustainable use. This principle is given effect by the recent promulgation of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) (NEMBA) and the National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) (NEMPAA). Chapter 3 of NEMBA calls for the development of a National Biodiversity Framework. The NBSAP is the first step in the process of developing this Framework.

The NBSAP was prepared during May 2003 to May 2005, under the strategic guidance of a Project Steering Committee, with representation by national departments, national agencies such as the National Botanical Institute (from September 2004, this became the South African National Biodiversity Institute) and South African National Parks, provincial departments and agencies (such as provincial Parks Boards) responsible for biodiversity conservation, as well as some representation by civil society. A National Project Manager was appointed to manage the process, assisted by a Project Management Team and several voluntary Task Teams.

During the stocktaking and assessment phase, a number of consultants were contracted to provide a strategic assessment of the key thematic areas of conservation (including spatial and social components and key threats such as invasive alien species), sustainable use, access and benefit sharing, economic integration and poverty alleviation, policy, legislation and institutional capacity. Six Task Team workshops (held between October 2003 and April 2005) brought together a wide range of expertise and interests to develop the draft Strategy.

The draft Strategy was debated in a series of consultative workshops. A first national workshop was convened in March 2004 to discuss the stocktaking and assessment and debate the draft Strategy, followed by a second national workshop in July 2004. Additional discussions and consultations took place in all nine provinces during 2004, and with various national departments and NGOs. In addition, a national workshop on sustainable use and benefit sharing was held in June 2004. An NGO biodiversity network, NetBio, hosted several workshops for NGOs and CBOs, while civil society representatives attended all the national and provincial workshops. Two workshops that focused on municipalities were held in partnership with the South African Local Government Association (SALGA) in October and November 2004. These were attended by representatives of all three types of municipality (metropolitan, district and local), from all nine provinces.

The first comprehensive national spatial assessment of the status of biodiversity at the ecosystem level was carried out

in 2004, as part of the NBSAP process. The National Spatial Biodiversity Assessment (NSBA) was funded jointly by DEAT and the South African National Biodiversity Institute (SANBI). The NSBA used systematic biodiversity planning techniques to determine the conservation status of ecosystems and to identify national priority areas for conservation action and more detailed planning. The NSBA has four components, dealing with terrestrial, river, estuarine and marine environments.

The NBSAP and the NSBA form the basis of the National Biodiversity Framework, which will undergo a further consultative process during 2005, and will be reviewed and amended as necessary every five years.

The first comprehensive national spatial assessment of the status of biodiversity at the ecosystem level was carried out in 2004, as part of the NBSAP process.

3. EXECUTIVE SUMMARY OF COUNTRY STUDY

3.1. Social, political and economic context

The Republic of South Africa is the southernmost country on the African continent stretching from latitude 22°S to 35°S, and from longitude 17°E to 33°E and covering an area of 1 219 090 km^2. The South African population is diverse and is estimated to number 45 million, with a population growth rate of 2.1% per annum. Although South Africa is regarded as a middle-income developing country, income distribution is highly skewed. Poverty is widespread in South Africa. Half of all South African households (or more than 22 million people) earn less than R353 per adult per month, or approximately US$2 per day. The national unemployment rate is estimated at about 26% but is much higher in some areas. Poverty leads to malnutrition and exacerbates health risks such as malaria, tuberculosis and HIV/AIDS. Poverty alleviation and job creation are national priorities.

By 2001 approximately 50% of the population of South Africa resided in urban areas. The urban areas have well developed financial, legal, communications, energy and transport sectors and modern infrastructure. The rural areas, however, have limited infrastructure and development.

South Africa has the largest economy in Africa and has a stock exchange that ranks among the ten largest in the world. In the past, the South African economy was based chiefly on primary production and extraction of resources. The southern African sub-continent contains some of the oldest rocks on earth and South Africa is very well endowed with mineral resources, including gold, platinum, diamonds, copper, iron, manganese, vanadium and coal. Agriculture is also an important sector. Although its percentage contribution to Gross Domestic Product (GDP) has declined in recent years, agriculture is socially important, being the main employer in rural areas where few other employment options exist. The agricultural sector provides materials for the important manufacturing sector and contributes to national food security. The majority of land in South Africa (86%) is zoned for agriculture, of which 13% is used for cultivation of crops. Most of this land is privately owned.

In recent decades, the South African economy has shifted away from primary sectors, with secondary and tertiary sectors becoming more important. For example, the contribution of tourism to the economy has overtaken that of agriculture. The tourism industry contributed an estimated 10% of GDP

By 2001 approximately 50% of the population of South Africa resided in urban areas.

in 1999. Tourism is currently the fastest growing sector of the economy.

Private and communal landowners, particularly those involved in economic sectors such as mining, agriculture and urban development, are important stakeholders for implementation of the biodiversity strategy.

The serious poverty and underdevelopment amongst large sectors of the population is largely due to South Africa's history of colonialism and apartheid. Under race-based apartheid policy and legislation, the majority of South Africans were systematically dispossessed of their land and denied access to resources and adequate services, including healthcare, housing and education. Redressing the wrongs of the past and ensuring equitable access to resources is essential in South Africa.

South Africa's first non-racial elections were held in 1994 and brought the African National Congress (ANC) to power, with Nelson Mandela as the country's first democratically elected president. South Africa's history presented the new government with enormous challenges. The first ten years of democracy saw a thorough overhaul of founding principles, policies, legislation and institutions. South Africa is in the unusual position of having changed virtually every piece of legislation in the past decade, with the stated intention of achieving justice, equity and sustainability. Three spheres of government have been established: national, provincial and local. Each is tasked with addressing the legacy of the past and ensuring a sustainable future for the country. While the political focus of the first decade of democracy in South Africa was on policy changes and the overhaul of legislation, the focus of the second decade is on implementation.

3.2. Legislative and institutional context

Administrative boundaries changed dramatically post-1994, to form nine new provinces: Eastern Cape, Free State, Gauteng, KwaZulu-Natal, Limpopo, Mpumalanga, North West, Northern Cape and Western Cape, each with its own Provincial Legislature. The number of local authorities was reduced from 843 municipalities to 284 in December 2000. The new municipalities are of three types: one-tier metropolitan

The serious poverty and underdevelopment amongst large sectors of the population is largely due to South Africa's history of colonialism and apartheid.

municipalities, two-tier district and local municipalities. These changes have affected local government in the short term, creating new opportunities as well as challenges such as capacity constraints. Local government has an important role to play in development planning and management of biodiversity, and will require particular focused support to facilitate implementation of the NBSAP.

South Africa has signed and ratified a large number of international conventions, treaties, protocols and other agreements. South Africa ratified the Convention on Biological Diversity in 1995, and is committed to sustainable development and international co-operation on matters relating to environment, development and human rights. South Africa's policy and legislation for environmental management, including biodiversity conservation, has undergone profound changes in the past decade. This policy development process is ongoing.

South Africa's Constitution (Act 108 of 1996) creates the overall framework for environmental governance in South Africa by establishing the right to an environment that is not harmful to health and well-being; by balancing the right to have the environment protected with rights to valid social and economic development and by allocating environmental functions to a wide range of government agencies in all spheres and requiring co-operation between government agencies and spheres of government. The Constitution emphasises the principle of co-operative government and reflects a fundamental departure from the past in that the three traditional spheres of government – national, provincial and local – are no longer regarded as hierarchical tiers with national government at the helm, but rather as three "distinctive, interdependent and interrelated" spheres of government. National legislative competencies include land reform, water resources, forest resources, marine resources, national parks and national botanical gardens. Functional areas of concurrent national and provincial legislative competence include environmental management, pollution control, soil conservation, nature conservation (excluding national parks, national botanical gardens and marine resources) and regional planning and development.

National legislation has been promulgated to govern national competencies such as water (National Water Act, Act 36 of 1998), forests (National Forests Act, Act 84 of 1998), marine resources (Marine Living Resources Act, Act 18 of 1998) and more recently, national parks and national botanical gardens, which are governed by NEMPAA and NEMBA, respectively. National policy on coastal resources has been developed and legislation is currently being developed. The wide range of legislation dealing with various aspects of biodiversity, including various types of protected areas, has resulted in a relatively high number of state departments and agencies being responsible for managing biodiversity within protected areas, and across the landscape and seascape outside the protected area network.

The biodiversity conservation sector in South Africa is well established. DEAT is the primary custodian of the environment in South Africa, but this responsibility is shared. Biodiversity is also an important function of other national departments such as Department of Water Affairs and Forestry (DWAF) and the Department of Agriculture (DoA), and a number of other public and private (civic) institutions at national, provincial and local level. In September 2004, NEMBA transformed the National Botanical Institute (NBI) into the South African National Biodiversity Institute (SANBI). While the NBI focused on botany, SANBI will focus on biodiversity in all its forms, including terrestrial, marine and other aquatic ecosystems. NBI dealt with plants, while SANBI will deal with plants, mammals, birds, amphibians, fish, reptiles, invertebrates and other organisms, particularly with regard to bioregional planning and programmes, biodiversity research, monitoring and reporting. South Africa has a well-established research capacity, with a number of world renowned universities, science councils and other research institutions.

A number of large, cross-sectoral programmes have been initiated in South Africa during the past decade, focusing on development and poverty alleviation. These present important opportunities to mainstream biodiversity considerations in development planning, capacity building and community empowerment. Examples include the Working for Water, LandCare and Integrated Sustainable Rural Development programmes. Bioregional planning and integrated bioregional programmes have been effectively implemented in a number of internationally recognised biodiversity hotpots in South Africa, with funding assistance from the GEF, international NGOs such as Conservation International, the National Botanical Institute (now SANBI) and provincial conservation agencies. SANBI is increasingly playing a co-ordination and facilitation role in bioregional planning and programmes. For example, SANBI hosts the Cape Action for People and Environment (C.A.P.E.) programme and the Succulent Karoo Ecosystem Programme (SKEP) and is co-ordinating the development of the National Grassland Biodiversity Programme.

3.3. South Africa's rich diversity

The diversity of peoples, topography, climate and geology of the country ensures a wide variety of landscapes, scenic vistas, lifestyles and knowledge. These natural and cultural resources underpin a large proportion of the economy and many urban and rural people are directly dependent on them for jobs, food, shelter, medicines and spiritual well-being.

South Africa is a megadiverse country, considered one of the most biologically diverse countries in the world, largely due to the species diversity and endemism of the vegetation. The major natural systems of the country have been classified in terms of the biome concept, based on dominant plant life forms, correlated with climatic variations. Biomes found in South Africa are desert, fynbos, succulent Karoo, Nama Karoo, grassland, savanna, Albany thicket, forest and wetland vegetation.

South Africa occupies only 2% of the world's surface area but is home to nearly 10% of the world's plants and 7% of the world's reptiles, birds and mammals. South Africa is home to approximately 24 000 plant species. Levels of endemism are high, especially for plants. Plant genetic diversity is also unusually high, contributing to the potential for developing new medicines, crops, cosmetics, ornamental plants and other useful products.

South Africa's faunal diversity is also high relative to the land surface area. South Africa is home to an estimated 5.8% of the global total of mammal species (close to 300 species), 8% of bird species (more than 800 species recorded), 4.6% of reptile species (288 species) and 5.5% of the world's known insect species (50 000 species have been recorded in South Africa, but an estimated further 50 000 have not yet been described). In terms of the number of endemic species of mammals, birds, reptiles and amphibians, South Africa ranks as the fifth richest country in Africa and the 24th richest in the world. Marine biological diversity is also high. There are over 11 000 species found in South African waters, which is about 15% of global species, with more than 25% of these marine species (or 3 496 species) being endemic to South Africa.

South Africa occupies only 2% of the world's surface area but is home to nearly 10% of the world's plants and 7% of the world's reptiles, birds and mammals.

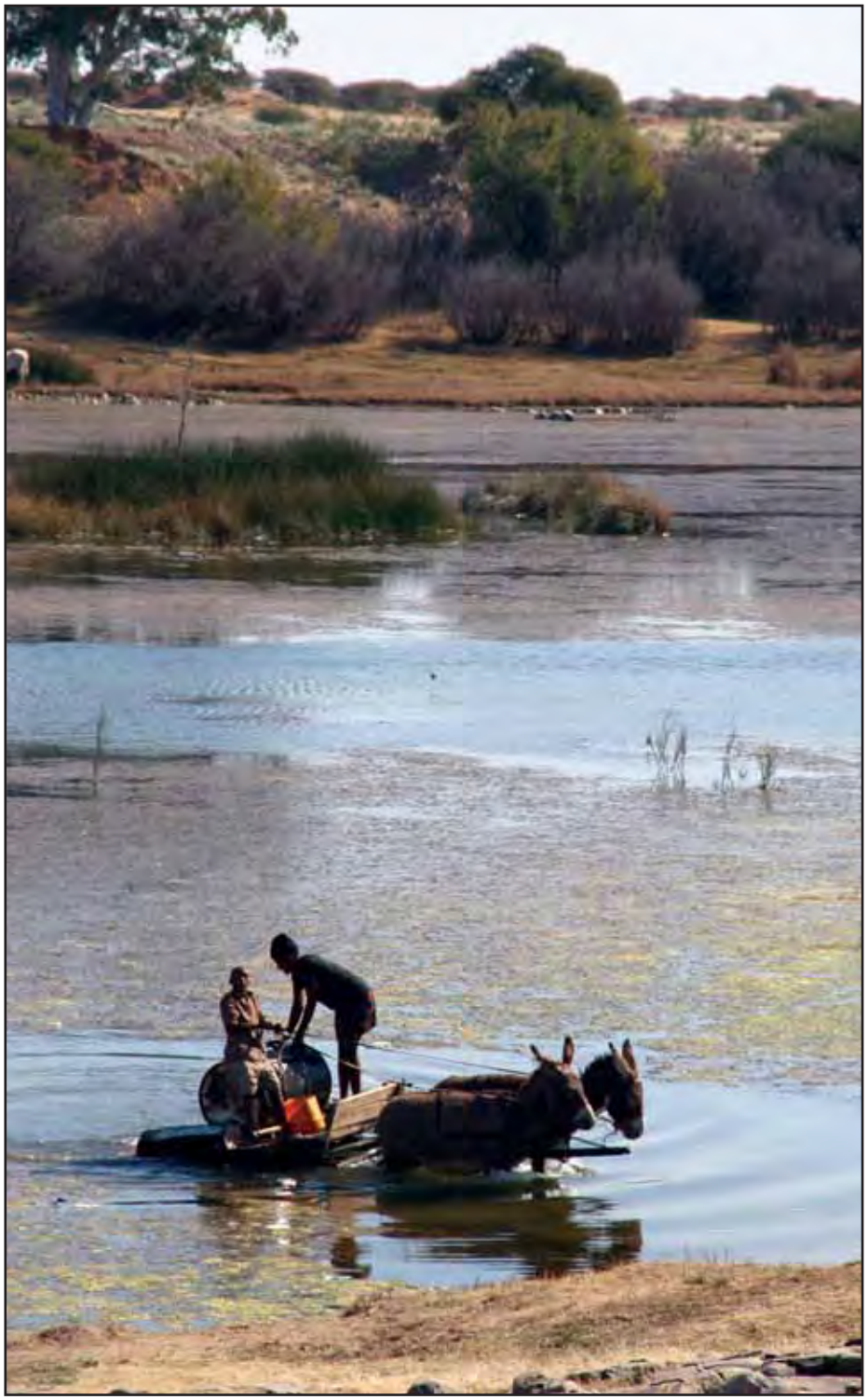
Three globally recognised biodiversity hotspots (areas with especially high concentrations of biodiversity, which are under serious threat) are found in South Africa: the Cape Floral Kingdom (equivalent to the fynbos biome), Succulent Karoo (shared with Namibia) and the Maputaland-Pondoland-Albany centre of endemism (Maputaland-Pondoland is shared with Mozambique and Swaziland). The succulent Karoo biome is one of only two arid biodiversity hotspots in the world, the other being the Horn of Africa.

3.4. Species assessments

The first assessments of the conservation status of certain southern African plants were published in the 1980s, with a comprehensive assessment published only in 1996. The 1996 southern African plant Red Data List (RDL) was updated in 2002, with particular emphasis on socially and economically important species, species known to be unsustainably harvested, and species of special interest such as endemics. Nevertheless, the conservation statuses of only about 25% of the plants listed in the 1996 RDL have been updated since 1996. Of the 948 taxa assessed, 414 are threatened with extinction, while 108 are data deficient. Fifteen are considered to be extinct while 19 are critically endangered (all are endemic to South Africa). The major threatening processes are noted to be habitat transformation and degradation due to agricultural activities, urban development (especially coastal development), mining, industry and roads, the spread of invasive alien species, subsistence harvesting (especially of medicinal plants) and illegal collection for commercial trade (particularly of groups such as cycads and succulents). Climate change is recognised as having potentially serious consequences for South Africa's vegetation, especially the succulent Karoo and grassland biomes.

An early assessment of the conservation status of South African mammals was published in 1986, but covered terrestrial mammals only. The most comprehensive assessment of the conservation status of South Africa's mammalian species was made in 2002/2003. The Red Data Book of Mammals of South Africa indicates that of the 295 species and sub-species of South African mammals evaluated, 12% are endemic, 57 species (19.3%) are threatened (critically endangered, endangered or vulnerable), while a further 38 (12.8%) are near threatened. Of the critically endangered and endangered species, 70% and 33% respectively are endemic to South Africa. Almost a fifth of all mammal species could not be assessed, due to data deficiencies. The main threatening processes impacting on mammals are habitat loss, degradation and transformation due to deforestation, agriculture, commercial timber planting and urban and industrial development as well as poisoning, pollution and hunting.

An assessment of the status of southern African bird species, published in 2000 by BirdLife, an NGO, indicates that two species are extinct in the region while 59 species are threatened and 64 are near threatened. The species list of South African birds is in the process of being updated and numbers more than 800 species.



Almost half of South Africa's river systems are critically endangered.

Given the high diversity of marine species in South African waters and the socio-economic importance of marine fisheries, an assessment of marine fish fauna is needed urgently.

The Atlas and Red Data Book of the Frogs of South Africa, Lesotho and Swaziland, published in 2004, indicates that 20 of the 114 recorded species of frogs (17%) are threatened (including four critically endangered species) and a further five species are near threatened. Eight species are data deficient.

The last formal assessment of the status of South African freshwater fishes was carried out in 1987 and most South African freshwater fish species need to be re-evaluated. South African marine fish species have not been assessed. Given the high diversity of marine species in South African waters and the socio-economic importance of marine fisheries, an assessment of marine fish fauna is needed urgently.

3.5. Ecosystem status

Assessments of biodiversity in South Africa have mainly focused at the species level in the past.

South Africa's first comprehensive national assessment of the status of biodiversity at the ecosystem level was carried out during 2004 in a partnership between DEAT and SANBI, as part of the NBSAP process. The objective was to systematically identify geographical priority areas for the development of short- to medium-term strategies and actions. The National Spatial Biodiversity Assessment (NSBA) used systematic biodiversity planning techniques to determine the status of ecosystems and to identify national priority areas for conservation action and more detailed planning. The NSBA integrated terrestrial, inland water, estuarine and marine ecosystems, using available spatial data, conservation planning software and a series of expert and stakeholder workshops. The NSBA assessed the status of ecosystems and the adequacy of the current protected area network, and identified broad priority areas for conservation action. This assessment was carried out at a national (1:250 000) scale, and provides a national context for biodiversity plans at the sub-national and local scale.

The spatial biodiversity assessment of South Africa's 440 terrestrial ecosystems showed that 34% are threatened. Of these, 5% are critically endangered (mainly in the fynbos and forest biomes), 13% are endangered (mainly in the grassland

and savanna biomes) and 16% are vulnerable (mainly in the fynbos and grassland biomes).

The status of river ecosystems in South Africa is cause for concern. The spatial biodiversity assessment of South Africa's 120 river signatures found that 82% are threatened. Almost half, or 44%, are critically endangered, while 27% are endangered, 11% are vulnerable and 18% are least threatened. River ecosystems in South Africa are poorly protected. South Africa is a water-scarce country and all freshwater systems are heavily utilised. The assessment focused on main stems of rivers. There is a need to extend the assessment to tributaries, and to identify priorities for conservation.

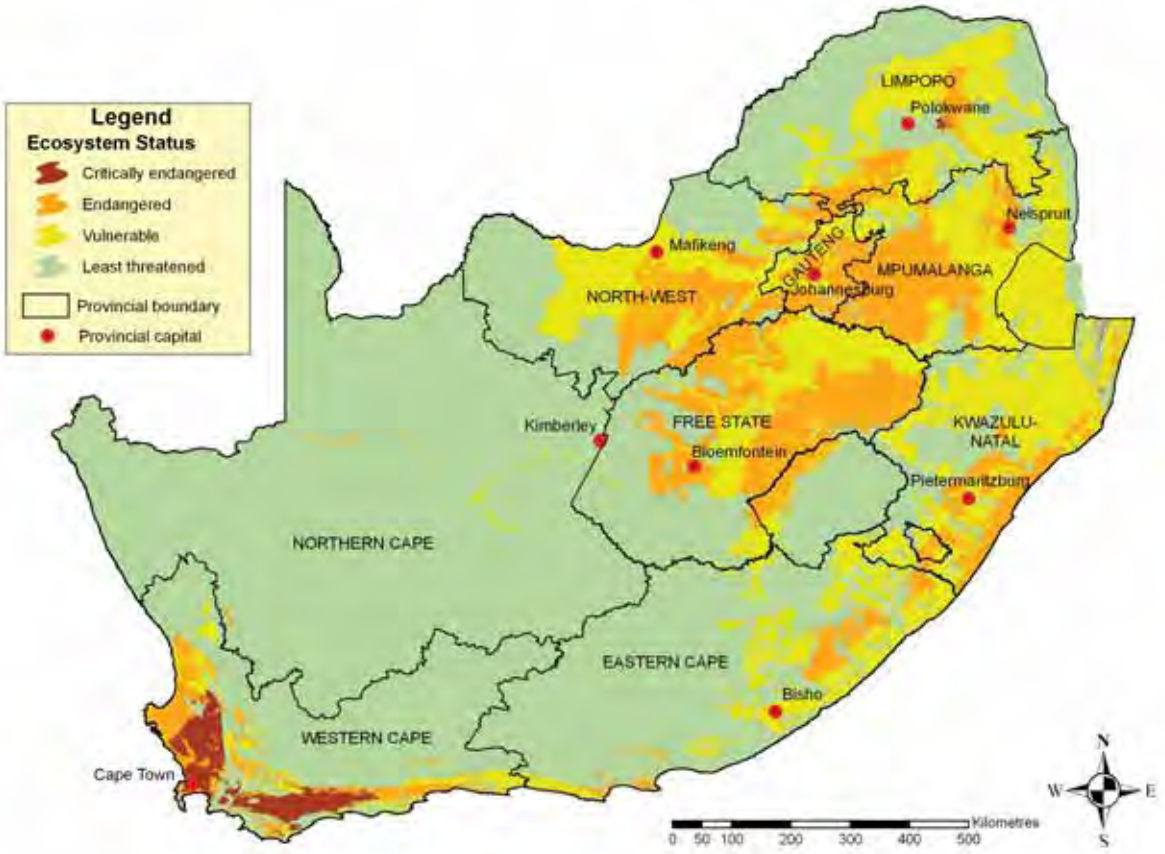
South Africa has 259 estuaries, which can be divided into five different types: estuarine bays, permanently open estuaries, river mouths, estuarine lakes and temporarily closed estuaries. These various types are distributed across three zones, namely the cool temperate zone on the west coast, the warm temperate zone on the south coast, and the subtropical zone on the east coast. This classification gives us 13 estuarine zonal-types or groups. Of these groups, three are critically endangered and five are endangered.

The spatial biodiversity assessment of the marine environment showed that 65% of South Africa's 34 marine biozones are threatened, with 12% being critically endangered, 15% endangered, 38% vulnerable and 35% least threatened.

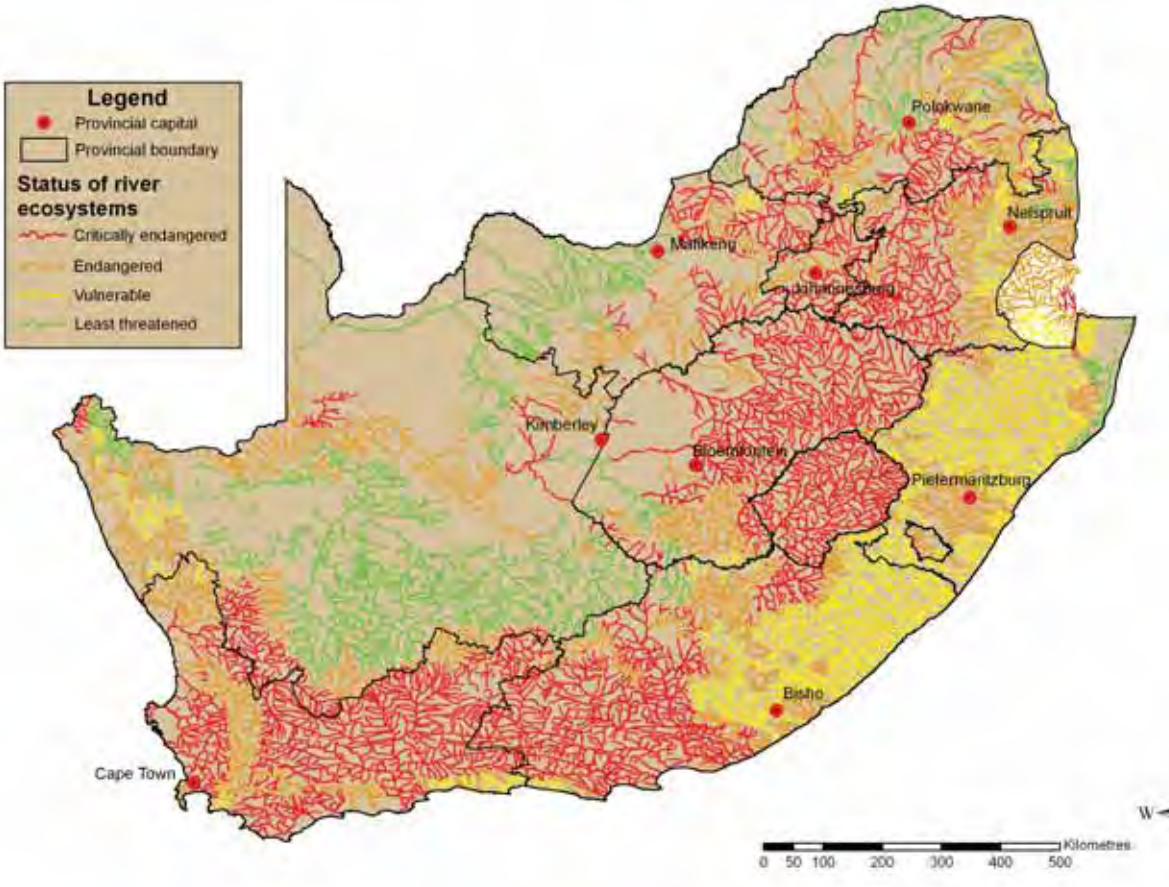
The declining status of ecosystems is cause for considerable concern, since international and national research has shown that degradation of ecosystems leads to a reduction in ecosystem services, such as a reduced capacity to generate clean water and a loss of food production due to land degradation. These losses are often felt disproportionately by the urban and rural poor, who are most exposed to the effects of pollution and who rely directly on the natural environment for their livelihoods. This is a concern in all regions of the world and particularly in sub-Saharan Africa, where the condition and management of ecosystem services is a dominant factor influencing prospects for reducing poverty. The degradation of ecosystem services is already considered a significant barrier to achieving the Millennium Development Goals and the harmful consequences of this degradation could grow significantly worse in the next 50 years, according to the Millennium Ecosystem Assessment completed in 2004.

The status of river ecosystems in South Africa is cause for concern.

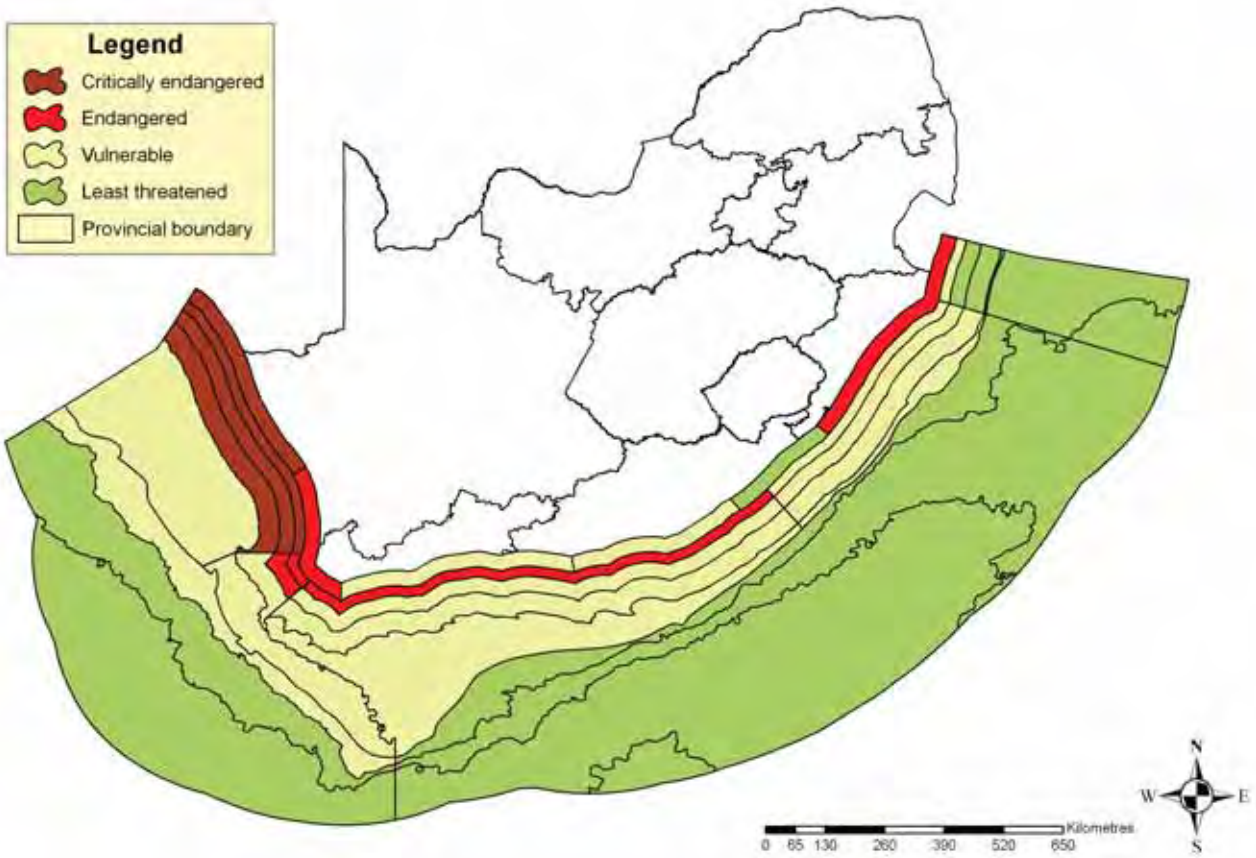
Status of Terrestrial ecosystems (NSBA 2004)



Status of river ecosystems (mainstem rivers only) (NSBA 2004)



Status of marine biozones (NSBA 2004)



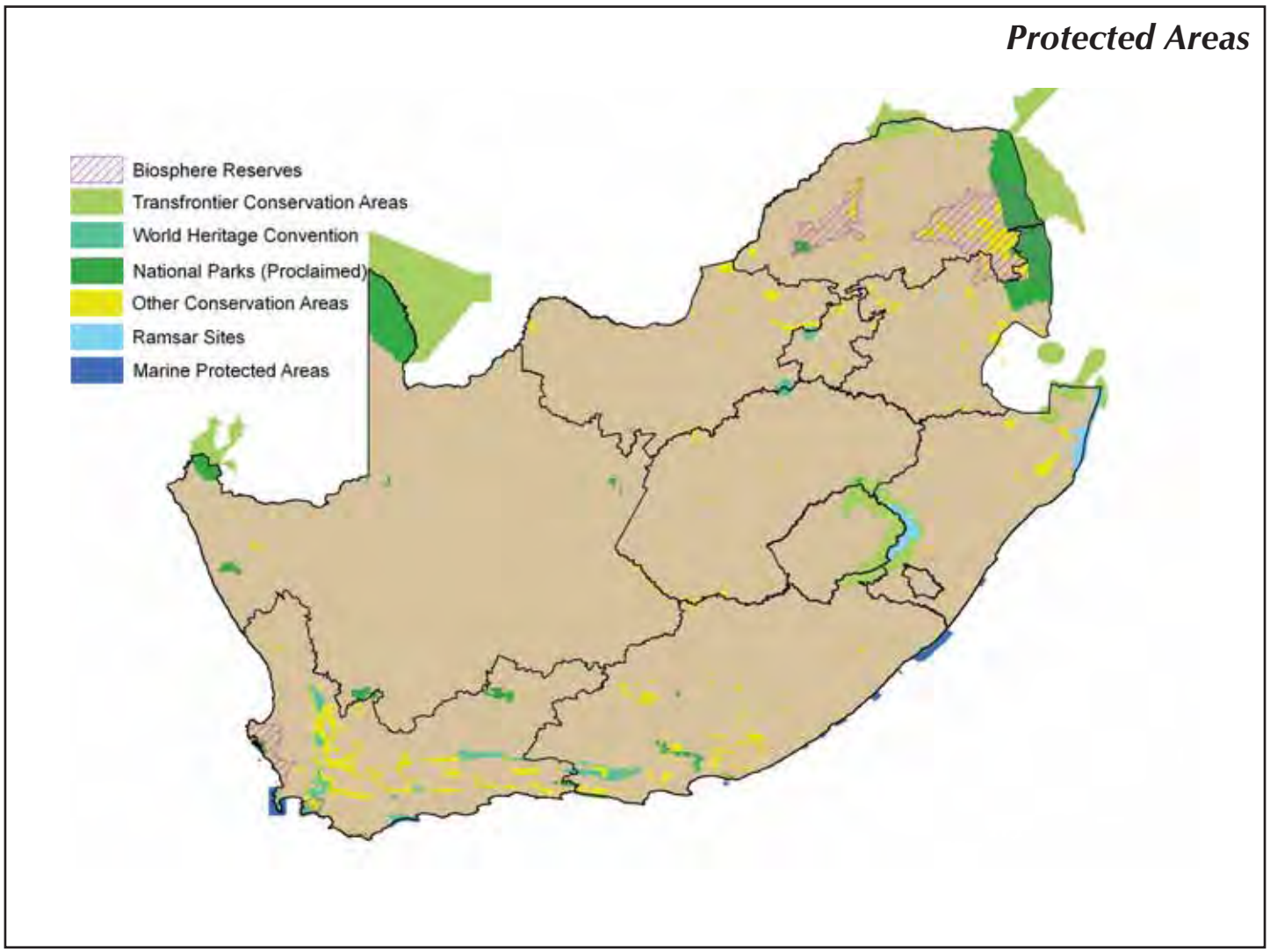
3.6. South Africa's protected area network and priority areas for conservation action

South Africa has a century-long history of conservation, with a well developed protected area network managed by a range of institutions at national, provincial and local level. However, the establishment of protected areas has been *ad hoc* in the past. Protected areas were often proclaimed on land marginal for agriculture or other use, and the current system of protected areas does not include a representative sample of all ecosystems. Although 5.4% of South Africa's land surface area is currently formally conserved through the system of national and provincial protected areas, the protected area network is skewed towards certain biomes such as savanna, leaving biomes such as grasslands and succulent Karoo under-conserved.

Rivers in particular are poorly conserved. Where they are included in a protected area, they often form the protected area boundary and are thus not really protected. Some coastal and marine biozones are poorly protected. Only two estuarine groups are considered well protected. Although 18% of South Africa's coastline currently falls within marine protected areas, these tend to be located close to the coastline, while offshore biozones are generally poorly protected. Marine biozones on the west coast are least protected and most threatened.

DEAT has a stated objective of expanding the formal protected area network to cover 8% of the land surface area and 20% of the marine areas by 2010.

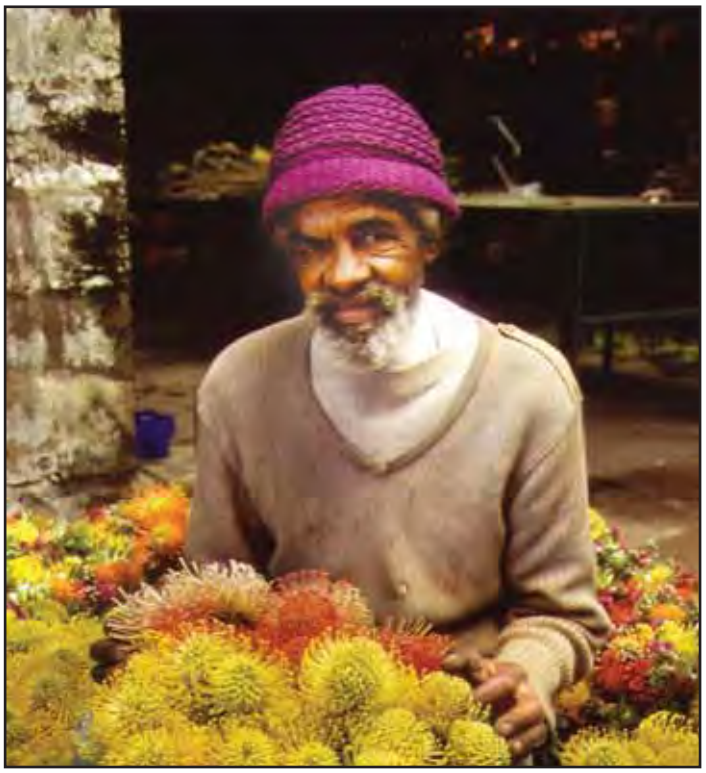
The NSBA has identified broad priority areas for conservation action. These are areas where there is a need for finer scale planning, expansion of the protected area system and integration of biodiversity-compatible development and resource management across the landscape and seascape, including on private and communal land. These areas are priorities for implementation of the Strategy, including strategies for mainstreaming, sustainable use, conservation and institutional strengthening.



3.7. Use of biodiversity in South Africa

In South Africa, terrestrial, inland water, coastal and marine ecosystems and their associated species are widely used for commercial, semi-commercial and subsistence purposes through both formal and informal markets. While some of this use is well managed and/or is at levels within the capacity of the resource for renewal, much is thought to be unsustainable. 'Use' in this case refers to extractive use, such as collecting, harvesting, hunting, fishing, and so on, for human consumption and production, as well as more indirect use such as ecotourism.

There is generally good information available on formal commercial industries based on biological resources (e.g. hunting, game farming, ecotourism and organised forest timber, wildflower and fern harvesting) because they are regulated, and managed through permit and licensing systems. This trade is largely regulated through the provincial conservation agencies. Wildlife ranching (game farming) is an important economic activity in the savanna biome, particularly in Limpopo (where more than half of all game farms are located) and the



The farming of wildflowers to service the horticultural industry has become big business in some areas, especially in the Western Cape.

Priority areas for conservation

Northern Cape. Game farming is also growing rapidly in the Eastern Cape. There are an estimated 9 000 privately owned game ranches in South Africa, covering an area of more than 17 million hectares. The sale of game has shown substantial growth in the last decade from 8 292 animals sold in 1991 (worth R9 million) to 20 022 animals sold in 2002 (worth R105 million) at 52 auctions held throughout South Africa. However, hunting is much more profitable than the sale of wild game. Professional hunting is estimated to support 70 000 jobs and generates R1 billion a year from trophy hunting fees, taxidermy, accommodation and venison.

As with game farming, the farming of wildflowers to service the horticultural industry has become big business in some areas, especially in the Western Cape. While some indigenous species are cultivated as with any other agricultural crop, selected fynbos plant species are also harvested from the wild for commercial purposes. Harvesting is done according to international certification standards based on currently known sustainable levels. A number of plants yield traditional beverages (such as rooibos tea and honeybush tea), or aromatic oils or remedies (such as buchu, hoodia and devil's claw), which have been commercialised. The market for wildlife and wildflowers has had positive impacts and has led to an increase in the area of land under conservation management.

South Africa is actively engaged in bioprospecting and the past decade has witnessed a flurry of activities in the exploration of local biodiversity for commercially valuable genetic resources and biochemicals. This is due largely to the country's extraordinarily rich and unique biodiversity and well-developed research and institutional capacity, which combined provide an extremely favourable environment for bioprospecting, as well as for other approaches based on trading and using biodiversity for commercial gain.

The absence of legal and administrative mechanisms to control access to South Africa's genetic resources and to set conditions for benefit-sharing has in the past been a key constraint towards achieving more meaningful benefit sharing. South Africa's legislation with respect to Access and Benefit Sharing

There are reported to be 28 million consumers of traditional medicines in South Africa, but the current supply of medicinal plants from woodlands and forests is thought to be unsustainable.

is currently in a transition, and new legislation encapsulated in NEMBA has yet to be implemented.

There is considerable lack of understanding of subsistence use of terrestrial and coastal resources in South Africa except that it is known to be extensive and in many cases is thought to be unsustainable. Poverty and unemployment levels are extremely high, particularly in the communal areas, and natural resource harvesting is often a significant component of livelihood strategies. Permits are required to collect resources such as thatch, reeds and bulbs from protected areas; these regulations differ from province to province. However, the existence of regulations or holding of permits does not ensure sustainability. Resource use in communal areas and use of resources from protected areas is extensive but difficult to quantify. A wide variety of resources are harvested for food and a subsistence income, from multiple food types, material for craft production, to building material, fuel and medicinal plants. In many cases, subsistence use is undertaken by very poor people to satisfy daily needs or to collect funds to do so. One of the biggest constraints is a lack of research and monitoring, both to determine sustainable quotas and to ensure compliance. There are very few examples of resource monitoring to assess sustainability of terrestrial resource use.

It is well known that informal resource use is an essential element of the livelihood strategy of many poor rural communities, especially in the savanna and forest biomes. Wood, reeds and thatch are widely used for housing and shelter of livestock, many species of plants are collected for food and medicines, while 'bushmeat', birds and insects also help poor communities meet their nutritional requirements. Natural resources provide important dietary supplements to rural communities, particularly during times of hardship. Wetlands play an important role in the livelihood strategies of rural communities, including cultivation, winter grazing and harvesting resources such as reeds, thatch and fish, but many are in poor condition. The Working for Wetlands programme is currently in the process of mapping South Africa's wetlands and assessing management priorities.

Firewood is still the primary source of energy for heating and cooking in a high percentage of households across the country. The direct use of wood for domestic purposes is an important source of 'income' since it acts as a substitute for formal energy and construction resources. The total adjusted direct consumption value of these products was estimated at R396 million, R1 529 million and R842 million for the Eastern Cape, KwaZulu-Natal and Limpopo Provinces respectively in 1998. This translates into 31.3%, 21.2% and 59.1% of the gross geographic products for agriculture of the respective provinces. These numbers are significant and point to a considerable underestimation of the value and contribution of the natural resources in these provinces to the livelihoods of their people and to their economic development.

Traditional medicines are considered essential for the welfare of black households in South Africa. In South Africa over 60% of all healing takes place outside the formal western-style medical system. There are reported to be 28 million consumers of traditional medicines in South Africa. However, the current supply of medicinal plants from woodlands and forests is thought to be unsustainable.

Although land degradation and over-harvesting of terrestrial resources is a concern in many areas, it is South Africa's freshwater ecosystems that are under most pressure. South Africa is a water-poor country and freshwater is a scarce resource. Most river systems in South Africa have been transformed, both physically and in terms of water quality. The poor condition of most inland aquatic ecosystems is a direct reflection of poor land and water management and development within the catchment area. Thus, the greatest threat to aquatic biodiversity is not merely as a result of unsustainable use levels of the resources, but rather because of decreasing freshwater availability and widespread ecosystem degradation. Aquatic habitats are impacted on by overgrazing, invasive alien species, informal settlements, urban development and industrial and agricultural pollution. Riparian activities (sand mining, impoundments, cultivation) also threaten aquatic habitats and associated biodiversity. The movement of fish (indigenous and alien) to new catchments severely threatens biodiversity of aquatic systems. The movement of fish between catchments requires strict control and strong enforcement.

The marine fishing sector is an important economic sector in South Africa. About 600 000 tons of marine resources are harvested annually by 27 000 South African fishermen and women, with a value of approximately R2.5 billion. The value of the entire fishing industry, incorporating commercial, recreational and subsistence fishing, is estimated to be R4.5 billion a year. As with terrestrial resources, the commercial sector is regulated, co-ordinated and well researched, but there is limited information on the subsistence sector. Strict allocation of fishing licenses linked to scientific assessment of Total Allowable Catches has enabled some pelagic fish stocks to recover. Despite the strict controls, certain commercial sectors (particularly abalone and line-fishing) are under severe threat and priority actions are needed to address this. Certain rocky intertidal invertebrates are over-exploited

Coastal and estuarine resources are particularly difficult to manage, due to the extensive coastline and overlapping jurisdictions.

by subsistence and semi-commercial harvesting. Sea birds (especially albatross, nine species of which are listed as endangered, vulnerable or near threatened) suffer high mortality during longline fishing activities for hake, tuna, swordfish, Patagonian toothfish and sharks. These indirect impacts of fishing are being monitored and addressed. A national plan to reduce the incidental catch of seabirds in longline fisheries was launched in 2002 but levels of success are as yet unknown. Poaching is a significant problem for some marine resources, particularly abalone. Coastal and estuarine resources are particularly difficult to manage, due to the extensive coastline and overlapping jurisdictions.

A number of important poverty alleviation and community development programmes have been initiated in South Africa, and present an opportunity for improving natural resource management and linking biodiversity and social development. These include the Working for Water Programme, the Integrated Sustainable Rural Development Strategy and the Expanded Public Works Programme, which focus on employment opportunities for the poor. The linkages between poverty alleviation and well-functioning ecosystems need to be emphasised at a local or community level, where the impacts are felt, as well as at a national level where important decisions about economic growth and development are made.

3.8. Pressures on biodiversity conservation and sustainability across the landscape and seascape

In many areas, especially in terrestrial ecosystems, it is not the direct use of biological resources that is threatening their sustainability, but rather indirect pressures such as changing land use and associated clearing of natural vegetation. Virtually all ecosystems and habitats in South Africa have been modified or transformed by human activities. Three key, inter-related threats are habitat removal, invasive alien species and climate change. The introduction and spread of invasive alien species is closely correlated with human activities. Land degradation, clearing of indigenous vegetation, invasion of land by alien species and climate change all interlink to create synergies that exacerbate and compound the impact on biodiversity, leading in turn to further degradation and loss.

Worldwide, loss and associated fragmentation of natural habitat is regarded as the foremost cause of loss of biodiversity, and South Africa is no exception. Land transformation is the most significant factor impacting on South Africa's biodiversity today. The agricultural sector has had the most profound impact on natural habitat across South Africa. The clearing of natural vegetation for crop cultivation has impacted on all biomes.

Many important biodiversity areas overlap with areas of high population density, high agricultural potential, mineral deposits and scenic beauty important for tourism. This can lead to conflicts regarding decisions over land use allocations and underscores the need for extensive consultation regarding land use changes, and the need to set aside areas considered irreplaceable for biodiversity conservation and important for ecosystem services. As far as possible, all land uses should integrate biodiversity considerations into management and mitigation plans. Planning frameworks at various levels – national, provincial and local – must take biodiversity into consideration in order to guide development. Provision is made in various pieces of legislation to encourage co-ordinated and integrated planning, but the legislation is still in the process of being implemented. For example, legislation administered by the Department of Land Affairs (DLA) and the Department of Provincial and Local Government (DPLG), requires provincial and local administrations to develop, with public consultation, economic development and spatial plans that integrate social, economic and environmental considerations. Legislation administered by DEAT, namely the National Environmental Management Act, 1998 (Act 107 of 1998) requires various national departments to develop Environmental Management Plans and/or Environmental Implementation Plans which should indicate how environmental considerations will be incorporated into their operations, while the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004) requires DEAT to develop a National Biodiversity Framework, which will co-ordinate and guide provinces and municipalities with regard to national biodiversity priorities.

The Working for Water Programme (WfW) is a major initiative that aims to control invasive alien plants in South Africa and at the same time create jobs and alleviate poverty.

In addition to habitat loss due to development pressures, transformation of habitats due to the uncontrolled spread of invasive alien species is a serious concern in all biomes and ecosystems across South Africa. More than 180 recognised invasive alien plant species already infest the equivalent of 10 million ha, or 8% of South Africa's surface area, an area that is constantly expanding. Invasive alien species, particularly large plants, have been well studied in South Africa, compared to other sub-Saharan countries. South Africa has a long tradition of listing invasive species present in the country and publishing annotated checklists and field guides to these species.

Invasive alien species have very serious negative impacts on the biodiversity and economy of South Africa. Woody invasive alien species, mainly from Australia and South America, use considerably more water than indigenous vegetation, resulting in about 7% of the annual flow of South Africa's rivers being lost. Invasive alien species pose a threat to the survival of thousands of endangered species of plants of all ecosystems in South Africa. They increase fire hazards and accelerate soil erosion. The widespread introduction of alien fish species into South Africa's rivers, streams and dams, and the translocation of indigenous fish between catchments and inter-basin transfers of freshwater have seriously impacted on native fish species.

The political recognition of the impact that invasive alien trees have on freshwater resources, supported by highly credible research, led to the Working for Water Programme (WfW), a major initiative that aims to control invasive alien plants in South Africa and at the same time create jobs and alleviate poverty. This is administered by the Department of Water Affairs and Forestry and is run in partnership with all the other relevant national and provincial departments, agencies and boards.

It is important to note the upward trend in the numbers of alien species arriving in South Africa. As South Africa becomes warmer under the influence of global climate changes it seems likely that its ecosystems will become increasingly prone to invasions by more tropical alien species. Extreme climate events such as floods exacerbate the problem, allowing alien plants to move into riverine areas and to spread across floodplains. Ecosystem transformation and fragmentation due to human intervention tends to promote the entry and spread of invasive alien species and this is likely to intensify in future. The first line of defence in combating the spread of invasive species must be prevention. Once an invasive species is firmly established, the costs of control or eradication are high and compete with other demands on scarce financial resources. Due to the extent of the problem in South Africa, containment of existing invasive alien species is also required, with the ultimate goal, where possible, being eradication.

Across the African continent, climate change is likely to accentuate social and ecological vulnerability and limit capacity to adapt to changes in ecosystem functioning. These changes have serious economic implications. Vulnerability is high due to frequent floods and droughts, a heavy reliance on rain-fed agriculture, and poverty. Adaptive capacity is low because of limited financial resources, skills and institutional capacity. Plant richness in South Africa is generally correlated with climatic variables and environmental variability, and it is expected that changing climate could have significant impacts on plant diversity in the country.

A South African country study on climate change, published in 1999, used bioclimatic modeling techniques to assess vulnerability and adaptation of plant biodiversity. The study predicted that the area hospitable to the country's biomes is likely to shrink to about 38 - 55 % of their current area. The largest losses are expected to occur in the western, central and northern parts of the country. These changes include the almost complete loss or displacement of the succulent Karoo biome along the west coast and interior coastal plain, an extensive eastward shift of the Nama Karoo biome across the interior plateau, and contraction of the savanna biome on the northern borders of the country. Higher levels of atmospheric carbon and reduced levels of frost are expected to encourage tree growth and an expansion of the savanna biome into the grassland biome. Although the fynbos biome is not expected to contract much in terms of area, many species are likely to be lost, due to more frequent and more intense fires, and loss of animal species important for pollination and seed dispersal. The mountainous areas may provide refuges for some species, if they are able to migrate to new areas. Species composition is likely to change across all biomes, leading also to major structural vegetation changes, especially in the grassland biome.

South African studies modeling the impacts of anticipated climate changes on 179 South African animal species indicate that some species are likely to be minimally affected, with no change in range size, while others are expected to become extinct. Most species' range sizes are expected to contract. Species-rich areas are likely to contract and become concentrated around the eastern highlands. Species losses are likely to be highest in the west, with the majority of range shifts in

Because of climate change, species composition is likely to change across all biomes, leading also to major structural vegetation changes, especially in the grassland biome.

an easterly direction, following the anticipated east-west aridity and temperature gradients. A higher proportion of red data species is expected to be impacted on by range shifts.

The impact of climate change is likely to be compounded by loss, fragmentation and degradation of natural habitat, which constricts the movement of species, and may mean that areas that would have been suitable for species to migrate into under changing climatic conditions are unable to support such shifts. It is essential that South Africa's National Biodiversity Strategy is closely linked with both the Climate Change Response Strategy and the National Action Programme to Combat Land Degradation and Alleviate Rural Poverty.

3.9. Key points that inform the strategy

South Africa's biodiversity is globally significant as well as important to the national economy and to people's livelihoods at a local level. This value is often not recognised by decision-makers, with the result that biodiversity is not adequately considered in development planning and conversions of land from natural habitat to other use. This may be partly due to the historical focus on species rather than ecosystems and the services they provide, and the fact that much of the use value of species to rural people is not quantified and is not included in economic indicators. Conservation of biodiversity in a network of protected areas, while important, is not enough to safeguard biodiversity resources now and in the future. It is essential that biodiversity be mainstreamed throughout the economy. This means that all sectors that impact on biodiversity, especially agriculture and urban planning, need to factor biodiversity considerations into their policies, plans and programmes. Mainstreaming implies that the full value of biodiversity should be recognised, so that activities that conserve biodiversity or use it sustainably should be rewarded economically and/or in other ways, while activities that destroy biodiversity should bear the associated cost. Critical for mainstreaming is an integrated planning framework that integrates and aligns biodiversity and development planning. It is especially important that spatial planning at national, provincial and local levels takes note of biodiversity priority areas.

It is critical that the value and importance of biodiversity to people's livelihoods is recognised and biodiversity management (including conservation, access, use and rehabilitation) must be integrated with poverty alleviation strategies and local economic development. Tenure reform and rights to access and use biological resources need to be clarified to ensure equitable sharing of benefits. Management of terrestrial and aquatic ecosystems needs to be integrated through effective catchment management that mitigates the impacts of land degradation, invasive alien species, pollution and

It is essential that biodiversity be mainstreamed throughout the economy.

In order to ensure conservation and sustainable use of biodiversity, the root causes of biodiversity loss must be tackled.

other threatening processes on our land, rivers, wetlands, estuaries and coastal and marine ecosystems, in order to ensure the continued provision of ecosystem services and enhance social and economic security.

After a decade of democracy, South Africa has an excellent national policy and legislative framework in place. Although this framework is still being developed and fine-tuned, significant progress has been made in establishing an enabling environment to achieve the goals of economic growth, equity, poverty alleviation, service delivery, participation and co-operative governance. This framework includes biodiversity-related policy and legislation. There is now an urgent need for implementation, especially by provincial and local spheres of government. Given the cross-cutting nature of biodiversity matters, it is essential that the constitutional principle of co-operative governance is applied through partnerships and collaborative programmes, especially in sectors and spatial areas where jurisdictions and mandates overlap. This applies especially to all aquatic ecosystems, including wetlands, rivers, estuaries and coastal areas. Much more needs to be done to encourage participation, raise awareness, facilitate a sense of responsibility and encourage private and communal landowners to manage biodiversity across the landscape and seascape, and not just to focus on state-controlled protected areas.

In order to implement policy and legislation effectively, the constraints on institutional capacity at all levels in South Africa need to be addressed, especially at the local level. The tools must be available to do the job that is required. This includes financial and other resources, such as staff (in sufficient numbers and with appropriate skills) and the necessary equipment, operational procedures and an appropriate organisational culture. Institutions in all spheres of government and outside government need appropriate structures, information management and systems that support implementation. Research must support information needs and there should be ongoing monitoring, evaluation and adaptation.

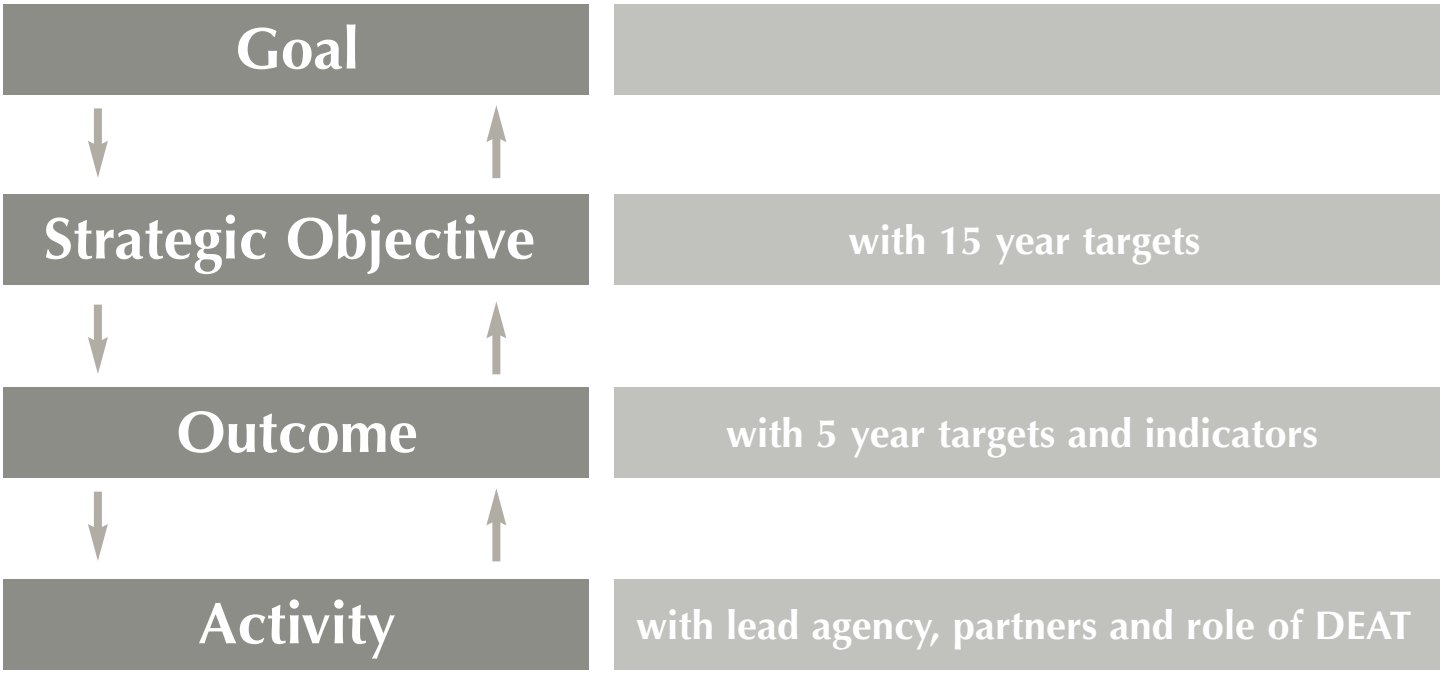
In order to ensure conservation and sustainable use of biodiversity, the root causes of biodiversity loss must be tackled. These often lie at a systemic level, and will need strong commitment at the highest levels of government. The Strategy has a strong focus on mainstreaming and integration, institutional effectiveness, co-operative governance and partnerships. South Africa has achieved remarkable progress in a decade of democracy, but much still needs to be done. The challenges are enormous, and the Strategy needs to be implemented through a prioritised set of actions to achieve measurable outcomes.

3.10. Summary of NBSAP strategic objectives and outcomes

The goal of the NBSAP is to conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future. In support of this goal, five key strategic objectives (SOs) have been identified, each with a number of outcomes and activities. The hierarchy of strategic objectives, outcomes and activities, with associated targets, objectives, indicators and lead agencies, is shown schematically in Figure 1.

The strategic objectives and outcomes are summarised in Table 1. Section 4 presents the strategic objectives, outcomes and activities in more detail. Section 5 sets out targets, lead agencies and implementing partners for each outcome and activity.

Figure 1.



GOAL: Conserver and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future

SO3: Integrated terrestrial and aquatic management across the country minimises the impacts of threatening processes on biodiversity, enhances **ecosystem services** and improves social and economic security

SO4: Human development and well-being is enhanced through **sustainable use** of biological resources and **equitable sharing of the benefits**

SO5: A **network of conservation areas** conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape

SO1: An enabling **policy and legislative framework** integrates biodiversity management objectives into the economy

SO2: Enhanced **institutional effectiveness and efficiency** ensures good governance in the biodiversity sector

Strategic Objective 2:
Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector

Strategic Objective 1:
An enabling policy and legislative framework integrates biodiversity management objectives into the economy

GOAL:
Conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future

Strategic Objective 3:
Integrated terrestrial and aquatic management across the country minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security

Strategic Objective 5:
A network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape

Strategic Objective 4:
Human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of the benefits

Table 1. NBSAP Goal, Strategic Objectives and Outcomes

GOAL				
Conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future.				
Strategic objectives				
1. An enabling policy and legislative framework integrates biodiversity management objectives into the economy.	2. Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector.	3. Integrated terrestrial and aquatic management minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security.	4. Human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of the benefits.	5. A network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape.
OUTCOMES				
1.1 The value of biodiversity to the economy and to people's lives is quantified and monitored to inform policy, strategy and action.	2.1 The biodiversity sector is transformed and representative of South African society.	3.1 National initiatives to manage terrestrial and aquatic ecosystems are co-ordinated, developed and implemented with full stakeholder participation to contribute to sustainable socio-economic development.	4.1 An equitable access, rights and responsibilities regime promotes sustainable use of biological resources.	5.1 Biodiversity priority areas identified in the NSBA are refined in provincial, regional and local systematic biodiversity plans.

OUTCOMES ***(continued)***				
1.2 Biodiversity considerations are integrated into macro-economic, trade, industrial and fiscal policy.	2.2 Co-operative governance at all levels results in improved biodiversity management.	3.2 Key production sectors and industries integrate biodiversity into their production and service standards.	4.2 Partnerships between government, the private sector, organised civil society and communities encourage entrepreneurship, innovation, investment and action at local level.	5.2 The protected area network is secured, expanded and managed to ensure that a representative sample of biodiversity and key ecological processes are conserved.
1.3 Biodiversity considerations are integrated into resource management policy and legislation.	2.3 Institutions with biodiversity-related responsibilities and programmes are effective, efficient and adequately capacitated.	3.3 A multi-agency national programme deals with the full suite of impacts posed by invasive species across the landscape and seascape.	4.3 The ecological and social sustainability of extractive use of biological resources is researched, assessed and monitored, and opportunities for improvement are identified and implemented.	5.3 Biodiversity is effectively managed in key ecological corridors and high priority fragments of natural habitat across the landscape and seascape.
1.4 A national biodiversity planning and assessment framework informs all decisions regarding land and resource use and spatial development.	2.4 Financial resources for biodiversity management are adequate, and effectively and efficiently used.	3.4 An integrated national programme facilitates adaptation to the predicted impacts of climate change on biodiversity across the landscape and seascape.	4.4 Use of biological resources is well managed to maximise sustainable benefits.	5.4 Management plans for species of special concern ensure their long-term survival in the wild.
	2.5 Information management systems, research priorities, and monitoring and evaluation frameworks are in place and effectively supporting biodiversity management.	3.5 Effective management and control measures minimise the potential risks to biodiversity posed by GMOs.		5.5. Research and monitoring programmes support the establishment and effective management of the network of conservation areas.
	2.6 A comprehensive and proactive national communication, awareness raising and advocacy strategy reaches targeted sectors and facilitates conservation and wise use of biodiversity.	3.6 Effective waste management and pollution control measures limit the impacts of pollution on biodiversity.		
	2.7 Proactive engagement and co-operation with the international community enhances conservation and sustainable use of shared resources and globally important biodiversity in South Africa.	3.7 Research and monitoring programmes support integrated management of terrestrial and aquatic ecosystems.		

4. NATIONAL BIODIVERSITY STRATEGY

GOAL: Conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future

South Africa is extremely rich in terms of biodiversity, but is a developing country where the majority of the population lives in poverty. Biodiversity must be managed in the context of ensuring equitable benefits to people, both current and future generations.

SO1.
An enabling policy and legislative framework integrates biodiversity management objectives into the economy

This Strategic Objective aims to address the single biggest threat to biodiversity, loss of natural habitat, by 'mainstreaming' biodiversity throughout the economy. All sectors that transform land or use large amounts of water, such as agriculture, urban development, mining, industry and transport, have an impact on biodiversity. Recognition of this impact must be built into macro-economic policy and spatial land-use planning, in order to reduce the social and economic costs associated with loss of biodiversity. The value of biodiversity to people's lives and to the economy as a whole should be recognised and built into decisions about how natural resources, especially land and water, are used. This Strategic Objective deals with the national policy and legislative framework required to facilitate this, while the actual 'doing' is addressed in Strategic Objective 3.

OUTCOME 1.1
The value of biodiversity to the economy and to people's lives is quantified and monitored to inform policy, strategy and action

ACTIVITY 1.1.1
Conduct a periodic countrywide total economic valuation of biodiversity, with an emphasis on goods and services that draws linkages between biodiversity, the economy and poverty alleviation

This valuation and assessment should provide estimates of the economic value of all the benefits people get from biodiversity, in order to help decision-makers understand the cost of losing biodiversity and the impact this will have on the economy. This should include the value of ecosystem services (such as water, pollination) and the contribution that industries based on biodiversity (such as fishing, hunting, ranching, ecotourism and nature-based recreation) make to the economy, including jobs created. The valuation should highlight the costs of conserving biodiversity, including opportunity costs, as well as the costs of NOT conserving biodiversity, for example, removing coastal dune vegetation or draining wetlands could lead to more severe flood damage

The value of biodiversity to the economy and to people's lives should be quantified and monitored.

and increase the costs of disaster management. The costs of dealing with threats such as climate change, invasive alien species and GMOs should be quantified.

ACTIVITY 1.1.2

Determine periodically, at the local and regional scale, the use values of biological resources to people at a household level, and identify opportunities to encourage the sustainable management of biological resources and ecosystems

In order to make appropriate decisions about the way biodiversity and land in general is used, it is necessary to know how species and ecosystems are being used and find ways to increase the benefits, while at the same time managing the use of resources more effectively. Biodiversity contributes to people's livelihoods in many ways and it is important that this can continue into the future.

It is important that the links between biodiversity, ecosystem services and security are stressed.

ACTIVITY 1.1.3

Package and sell the economic case for the importance of biodiversity, tailored to key decision-makers

The values determined by research need to be communicated to all decision-makers and applied to policies, strategies and actions to achieve sustainable development. Decision-makers in all organs of state and all spheres of government, and leaders in all sectors, must see the links between their mandates and biodiversity and identify ways of integrating biodiversity considerations into social, economic and development programs. It is important that the links between biodiversity, ecosystem services and security are stressed.

ACTIVITY 1.1.4

Reflect biodiversity values in national macro-economic indicators in order to monitor changes in natural capital

The critical importance of maintaining our stock of natural capital and the role this plays in sustainable development should be emphasised. The economic valuation of biodiversity will demonstrate the importance of biodiversity and provide data that can be applied to more integrated decision-making frameworks. Macro-economic indicators that go beyond the narrow Gross Domestic Product focus will assist policy- and decision-makers to monitor changes in natural capital.

OUTCOME 1.2

Biodiversity considerations are integrated into macro-economic, trade, industrial and fiscal policy

In order to achieve this outcome, discussion is needed between the biodiversity lead agents (DEAT and SANBI) and National Treasury, as well as relevant national departments and the financial and business sectors to focus on appropriate macro-economic measures.

ACTIVITY 1.2.1

Engage proactively and constructively with National Treasury to ensure that biodiversity is a key consideration in policy development, budgeting, planning and auditing processes

There are various ways of integrating biodiversity considerations into the practical application of macro -economic policy, such as through the national budget process. It is necessary to explore options and come up with practical workable solutions, which could include tax reforms, funds, incentives and penalties. In this way landowners, developers and resource users could be encouraged to manage biodiversity, use it wisely and avoid further unnecessary loss. Ideally, the application of appropriate fiscal policies should encourage good environmental management.

ACTIVITY 1.2.2

Integrate biodiversity considerations in policy development, budgeting and planning processes in the Department of Trade and Industry

Trade and industrial development can have significant impacts, positive and negative, on biodiversity. Biodiversity considerations need to be incorporated in industrial and trade policy, to support the development of a natural products sector and encourage biodiversity-friendly business and industry standards. Efforts must be made to ensure that trade agreements and intellectual property rights laws and policies do not impact negatively on biodiversity or the rights of holders of traditional knowledge on biodiversity.

ACTIVITY 1.2.3

Include biodiversity accounting in corporate environmental audits

Ways of measuring the impact of economic activity on biodiversity must be devised to be part of routine accounting and reporting practices. In this way improvements from year to year can be measured and the profit-making imperatives of business and industry can be balanced with broader social goals and responsibilities. This should apply to both the business sector and the government sector.

ACTIVITY 1.2.4

Target the banking industry and financial sector to identify incentives and opportunities to integrate biodiversity considerations into investment and lending policies

The financial sector has an important role to play in encouraging investment in development that does not harm biodiversity. Unsustainable development should be discouraged, as the costs will simply accrue in the future.

OUTCOME 1.3

Biodiversity considerations are integrated into resource management policy and legislation

The principle of co-operative governance implies that various departments should take the lead in effecting operational changes in various sectors (such as agriculture, commercial forestry, mining and urban development). These changes will need to be implemented by a number of roleplayers, including landowners and developers, across the landscape and

All sectors that use natural resources need to consider biodiversity when making decisions regarding land and resource use.

seascape. All sectors that use natural resources need to consider biodiversity when making decisions regarding land and resource use. This Outcome deals with the policy and legislation that governs such use, while implementation of integrated terrestrial and aquatic ecosystem management is addressed in SO3.

ACTIVITY 1.3.1

Integrate biodiversity considerations in the National Strategy for Sustainable Development

Biodiversity, and the goods and services that well-functioning ecosystems provide, is a cornerstone of sustainable development. It is important that biodiversity is fully integrated into South Africa's National Strategy for Sustainable Development.

ACTIVITY 1.3.2

Integrate biodiversity considerations in the National Climate Change Response Strategy and Action Plan and the National Action Programme to Combat Land Degradation

South Africa's Climate Change Response Strategy of 2004 notes that priority actions for 2005 are to set a timeframe for action, with specific milestones and responsibilities, to formulate appropriate national policies and measures for climate change action, and to develop a practicable plan of implementation. The biodiversity sector needs to engage in this process, to identify specific actions and timeframes for adaptation measures, particularly in those sectors identified as vulnerable in climate change assessments such as the South African Country Studies Programme. The National Action Programme developed in 2004 to meet obligations under the Convention to Combat Desertification (CCD-NAP) proposes an integrated National Sustainable Land Management Framework at national, provincial, local and community levels which should include biodiversity objectives.

ACTIVITY 1.3.3

Engage proactively and constructively with state departments and agencies to ensure that biodiversity is a key consideration in the policy development, budgeting and planning processes

All departments, such as Minerals and Energy, Land Affairs, Housing, Transport, Public Works, and Health can play an important role in reducing the rate of loss of biodiversity by managing biodiversity on land under their control, and integrating biodiversity considerations into their policies and programmes.

Mining activities can have a profound impact on biodiversity through destruction of natural habitat and through pollution.

ACTIVITY 1.3.4

Integrate biodiversity considerations in policy development, budgeting and planning processes in the Department of Water Affairs and Forestry

Biodiversity management is an important component of catchment management and management of forests, which include natural forests and woodlands. To ensure the future conservation and sustainable use of South Africa's forest and woodland biodiversity, it is important for all roleplayers to develop shared objectives and strategies for management. Fiscal and other measures must be pursued to help finance environmental management in catchments and encourage water users and land users to minimise loss of biodiversity, especially in priority areas.

ACTIVITY 1.3.5

Integrate biodiversity considerations in policy development, budgeting and planning processes in the Department of Agriculture

The agricultural sector is by far the largest user of land and water in South Africa. Opportunities for incentives that achieve dual objectives of agricultural production and biodiversity management must be identified. The Department of Agriculture is also the primary government body responsible for regulating biosafety. Attention is needed to regulate and manage GMOs in a way that avoids negative impacts on biodiversity and livelihoods.

ACTIVITY 1.3.6

Integrate biodiversity considerations in policy development, budgeting and planning processes in the Department of Minerals and Energy

Mining activities can have a profound impact on biodiversity through destruction of natural habitat and through pollution, especially of aquatic ecosystems. Effective measures for waste management and rehabilitation should be implemented during mining operations as well as after closure of mines. Reducing demand for energy will also have positive spin-offs for biodiversity, for example by mitigating climate change.

ACTIVITY 1.3.7

Integrate biodiversity considerations into tourism growth strategies, guidelines and codes of conduct

Tourism is a rapidly growing economic sector. The impacts of tourism on the environment should be managed while enhancing the positive impacts that tourism, especially eco-

More should be done to ensure sustainable use of fish stocks.

tourism, can have on conservation and job creation. Responsible tourism provides significant opportunities for simultaneously enhancing the conservation estate and expanding local economies.

ACTIVITY 1.3.8

Include biodiversity considerations in fishing regulations and guidelines, in order to mitigate negative impacts on biodiversity and encourage sustainable practices

Fishing is an important economic activity, but many fish stocks are under pressure. South Africa has already initiated considerable changes to fishing policy and regulation in the past years, to ensure greater equity and sustainability of commercial, subsistence and recreational fishing. More should be done to ensure sustainable use of fish stocks; limit the impact of introduced species; set norms and standards, and implement and enforce necessary time and area closures and restrictions for protection of nursery grounds; identify and eliminate subsidies that contribute to over-harvesting; eliminate destructive fishing practices; support aquaculture and mariculture while managing negative impacts such as introduction of alien species and associated parasites and

diseases; and expand the national network of Marine Protected Areas to halt loss of marine and coastal biodiversity and maintain productivity.

ACTIVITY 1.3.9

Align and rationalise legislation on land-use planning and management and catchment management

Many different departments at all spheres of government administer various aspects of land use and management of terrestrial and aquatic ecosystems. Ideally, all development should consider biodiversity management objectives. Legislation, strategies and frameworks that govern land and water use and management should work towards the goal of sustainable development.

ACTIVITY 1.3.10

Develop a national policy framework to guide the implementation of biodiversity offsets (off-site mitigation) in threatened ecosystems, ecological corridors and other special habitats

It is essential that the impact of development on biodiversity in sensitive and irreplaceable habitats be minimised. A framework to guide mitigation needs to be developed at national level, to be implemented in a co-ordinated way at provincial and local level.

ACTIVITY 1.3.11

Align, rationalise and/or develop (as appropriate) legislation on incentives and support for appropriate land management in biodiversity priority areas

Land-owners should be encouraged and supported to manage the biodiversity of which they are custodians. This does not always mean through financial incentives, and may include support such as information sharing, improved law enforcement, marketing, recognition and prestige. Legal mechanisms to support conservation efforts outside of protected areas may include tradeable development rights and deed of sale clauses encouraging conservation use.

ACTIVITY 1.3.12

Rationalise legislation on invasive alien species

Several pieces of policy and legislation deal with invasive alien species, such as legislation administered by the Departments of Environmental Affairs and Tourism, Agriculture, and Water Affairs and Forestry. This legislation must be rationalised and in some instances strengthened. All organs of state in all spheres of government, as well as the private sector and general public, need clear guidance and a uniform approach to deal with the serious threat of invasive alien species.

ACTIVITY 1.3.13

Rationalise legislation on genetically modified organisms

Several pieces of policy and legislation deal with GMOs, such as legislation administered by the Departments of Environmental Affairs and Tourism, Agriculture, Health, and Trade and Industry. This legislation must be rationalised and in some instances strengthened. As with other threats to biodiversity, a uniform approach is needed to deal with GMOs.

ACTIVITY 1.3.14

Finalise policy and regulations on translocation of wildlife, including extra-limital game and aquatic species

NEMBA allows for the listing of alien species and associated restricted activities. Translocation of species (including indigenous species) to areas where they do not occur naturally, can lead to problems such as undesirable species hybridisation (for example, between black and blue wildebeest) or competition between species that do not normally occur together. This problem is particularly acute with regard to aquatic species.

Outcome 1.4

A national biodiversity planning and assessment framework informs all decisions regarding land and resource use and spatial development

Spatial planning and integrated assessments that guide decisions about land use are important components of an 'enabling framework' to ensure mainstreaming of biodiversity. Integration of biodiversity into spatial plans by all spheres of government at all levels is particularly important in biodiversity priority areas.

ACTIVITY 1.4.1

Set quantitative national targets for all ecosystems and for threatened, endemic, indicator, flagship and high-value useful species

'Targets' in this sense refer to quantitative biodiversity targets based on best-available science, set for the purposes of sys-

tematic biodiversity assessment and conservation planning. They are not the same as political targets for implementation of conservation action (as included in Section 5), but rather assist in assessing the status of ecosystems and the extent to which the protected area network conserves biodiversity effectively. High-value useful species are regarded as priority species in Strategic Objective 4.

ACTIVITY 1.4.2

Update the National Spatial Biodiversity Assessment at least every five years, to assess the status of terrestrial, freshwater, estuarine and marine ecosystems, to identify ecosystems where no further loss or degradation of natural habitat should occur, and to identify gaps in the protected area network

South Africa's first national spatial biodiversity assessment was carried out in 2004. This should be updated and revised at least every five years, in turn guiding sub-national, bioregional and provincial planning priorities. As a first step, the National Spatial Biodiversity Assessment should be updated when more recent National Land Cover data is available. A national assessment of the status of wetland ecosystems is also urgently needed.

ACTIVITY 1.4.3

Ensure that the National Spatial Development Perspective takes the National Spatial Biodiversity Assessment into account

Spatial planning for both development and conservation purposes is carried out for various administrative boundaries (e.g. provinces and municipalities) and at various scales. These have to be aligned. In particular, the National Spatial Development Perspective needs to take national biodiversity priority areas into account, while the national spatial plans should guide 'nested' plans at biome, provincial, catchment or local authority level, so that the impact of development and land-use change on biodiversity is minimised.

ACTIVITY 1.4.4

Integrate biodiversity considerations in policy development, budgeting and planning processes in the Department of Provincial and Local Government

Although many aspects of biodiversity use and conservation (such as National Parks, marine resources, water and forests) are national legislative competencies in terms of the Constitution, provincial authorities have an important role to play in conservation. Local authorities, too, are key roleplayers

The NSBA should be updated when more recent National Land Cover data is available.

in ensuring sustainable use of biodiversity and environmental management. Such mandates require allocation of sufficient financial resources, whether through inter-governmental fiscal transfers, or other mechanisms based on the local economy.

ACTIVITY 1.4.5

Explore and develop innovative mechanisms to integrate biodiversity management and land reform programmes, to the mutual benefit of both land reform and biodiversity objectives

Given South Africa's past history and the resultant skewed access to land, a massive land reform programme is underway to redistribute land to those disadvantaged by apartheid. There is a challenge and an opportunity to integrate biodiversity considerations into the land reform programme and the processes of resettlement, tenure reform and agricultural reform. At the same time, land reform considerations should be integrated into biodiversity programmes.

Loss of natural habitat due to development is one of the key drivers of biodiversity loss.

ACTIVITY 1.4.6

Engage with provinces, metropolitan, district and local municipalities to integrate biodiversity into provincial and local planning and environmental management

Loss of natural habitat due to development is one of the key drivers of biodiversity loss. Biodiversity considerations must be factored into land-use decisions at a local level. It is essential that spatial biodiversity priority areas are integrated into spatial plans and policies that guide development at provincial and local government level. This includes Spatial Development Frameworks, municipal zoning schemes, permits for land-use change and environmental assessments. All local authorities are required to develop, with public consultation, Integrated Development Plans (IDPs) and Spatial Development Frameworks to guide local economic development and service delivery. These IDPs should take biodiversity into consideration. This is a critical point of intervention to minimise the impact of urban development and industrial development (and resultant loss of habitat) on biodiversity. Local government is required, in terms of NEMBA to align IDPs with the National Biodiversity Framework and to take threatened ecosystems and threatened species into account. Local authorities also need to pay particular attention to control and eradication of invasive alien species and to waste management and pollution abatement, especially where this impacts on aquatic ecosystems, whether freshwater, estuarine or marine. Spatial plans at local level should be informed by national and provincial priorities and should guide development in a way that minimises the impact on biodiversity. This is especially important in biodiversity priority areas and requires co-operation and co-ordination between all three spheres of government.

ACTIVITY 1.4.7

Integrate biodiversity considerations in Strategic Environmental Assessment, Integrated Environmental Management and Environmental Impact Assessment

Environmental Impact Assessment (EIA) procedures, as part of Integrated Environmental Management (IEM), play an important role in guiding decisions regarding land-use change in South Africa. However, there is room for improvement to ensure that EIAs are a tool for effective decision-making for long-term sustainability. The full social, economic and environmental implications, including future impacts, should be included in decisions that are made about important biodiversity resources and technologies, especially where these impacts are likely to be significant and irreversible. Impact assessments need to be strategic, rather than project specific. Strategic Environmental Assessment is a tool which could be used at a landscape level to guide and inform more project specific EIAs in order to address cumulative impacts. Methodologies such as Cost Benefit Analysis or Multi-Criteria Decision Support or other integrated decision-making frameworks should be applied, especially in biodiversity priority areas and for potentially far-reaching activities with long-term effects, such as introduction of invasive alien species and GMOs, or removal of habitat in threatened ecosystems. Decisions regarding development that may result in loss of biodiversity must be made with a full understanding of the trade-offs. The EIA process is guided by the NEMA principles, which are broad and open to interpretation. These principles have to be made more explicit in order to better guide impact assessment and development decisions. For example, principles such as "avoid or minimise loss of biodiversity" should be translated into quantitative targets or thresholds, especially in biodiversity priority areas where no further loss of biodiversity is desirable. For approved developments, there needs to be improved monitoring and enforcement of compliance with Records of Decision in order to ensure conservation and sustainable use of biodiversity.

SO 2.
Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector

In order to achieve the Goal and all the Strategic Objectives of this National Biodiversity Strategy, and to give effect to our Constitutional right to a healthy environment and to have the environment protected, effective and efficient institutions are needed at all levels and in all sectors of society. This Strategic Objective is cross-cutting and underpins all the other Strategic Objectives. Partnerships are key to meeting this objective – including partnerships with the international community.

OUTCOME 2.1
The biodiversity sector is transformed and representative of South African society

South Africa's political history and the policy of apartheid led to racial inequality in many sectors of the economy, including biodiversity management. The imbalances of the past must be addressed while aiming for equity and diversity in the institutions that focus on biodiversity research, management and conservation. At the same time, the culture and image of the sector should shift away from the old 'fences and fines' approach towards an inclusive, people-centred approach, and away from an emphasis on certain species towards an integrated ecosystem approach.

ACTIVITY 2.1.1

Implement programmes to promote and retain racial and gender representation at all levels in the sector

The biodiversity sector includes government departments at national, provincial and local spheres, research institutions and NGOs. Programmes and mechanisms to encourage new entrants to the sector and retain existing expertise include training and capacity building, provision of bursaries and scholarships, communication and awareness raising, improved salary scales and career pathing, possibly through partnerships with business sector, secondments, mentorships, and sponsorships.

ACTIVITY 2.1.2

Promote integration of different cultural perspectives in the organisational culture and image of the biodiversity sector

There is a need to improve the way institutions operate, in order to implement the *Batho Pele* approach, become more transparent and accountable to the public, and value staff at all levels.

OUTCOME 2.2
Co-operative governance at all levels results in improved biodiversity management

South Africa's Constitution establishes three distinct spheres of government, at national, provincial and local level. Each has certain mandates, roles and responsibilities for various

aspects of biodiversity conservation and environmental management. The constitution requires all three spheres of government to work together in a co-operative manner. Although the Department of Environmental Affairs and Tourism is the lead agent for environmental matters and the focal point for the Convention on Biological Diversity, many departments and agencies at national, provincial and local level have responsibilities in terms of biodiversity, and co-operation and co-ordination are essential.

ACTIVITY 2.2.1

Clarify the biodiversity related mandates of different organs of state within the provisions of new legislation

Although the Constitution of South Africa does not mention biodiversity, various related aspects, such as nature conservation, forests, marine resources and environmental health are assigned to various organs of state and spheres of government. Several national departments administer biodiversity-related legislation, while a host of national agencies, provincial departments and provincial agencies have mandates related to biodiversity conservation and management. There are many overlaps, sometimes resulting in confusion and a lack of implementation. In some instances, the institutional location of organs of state is not optimal. For example, museums are placed within the Department of Arts and Culture, which has raised concerns that most of South Africa's animal biodiversity collections and the taxonomic research associated with them have become marginalised from mainstream science, resulting in the weakening of South Africa's animal identification, classification and biogeographic services. After eleven years of democracy it is necessary to assess the mandates of various departments and spheres of government, and identify any amendments required, in order to ensure more efficient administration and effective implementation. The Inter-governmental Relations Bill under consideration should include effective mechanisms to implement biodiversity-related mandates.

ACTIVITY 2.2.2

Ensure that Environmental Implementation Plans (EIPs), Environmental Management Plans (EMPs) and State of

Although the Constitution of South Africa does not mention biodiversity, several related aspects are assigned to various organs of state and spheres of government.

Environment Reports at national, provincial and local level incorporate and reflect biodiversity objectives

Key mechanisms to facilitate integration of environmental considerations into the operations of national departments and provinces are Environmental Management Plans and Environmental Implementation Plans, required in terms of Sections 11 to 16 of NEMA. However, there is still much room for improvement in the development, implementation and monitoring of these plans, especially with regard to biodiversity management. At the same time there is a need to align reporting mechanisms, including indicators and timing of reports, in order to improve efficiency and monitor effectiveness.

ACTIVITY 2.2.3

Investigate and implement options for effective co-operation between national, provincial and local spheres of government and between the sectoral departments at provincial and local level

Although institutions for co-operative governance have been established at national level, such structures are notably absent at provincial and local level, where integration is necessary and where decisions about development, conservation and use of biodiversity translate into action.

ACTIVITY 2.2.4

Develop and implement mechanisms for collaboration and partnerships to effectively manage ecosystems and species that cross administrative boundaries

National and provincial conservation agencies should develop common objectives and collaborate through joint projects, joint management plans, partnerships, Memoranda of Understanding (MoUs), capacity sharing and joint accountability mechanisms in order to effectively manage habitats and species that cross administrative boundaries. This applies to terrestrial and aquatic ecosystems and includes protected areas and biodiversity outside the protected area network. There is also a need to standardise requirements for conservancies and private nature reserves that may cross administrative boundaries. This is particularly important in biodiversity priority areas.

ACTIVITY 2.2.5

Improve the mechanisms for co-operation and partnerships between government, business and civil society, for example by developing a Biodiversity Charter in consultation with all stakeholders

Co-operation and partnerships are important, not only between different government departments and spheres of government, but also between government, the business community and civil society (including NGOs, communities and scientists). Some forums and advisory structures do exist in some areas and some sectors and these should be expanded and strengthened. The opportunities and options for both formal and voluntary agreements and partnerships need to be developed, so that all sectors can work together to conserve and manage biodiversity. A Biodiversity Charter, or Black Economic Empowerment (BEE) scorecard, should be developed and implemented by government, private sector and NGOs in the biodiversity sector, to address transformation and BEE in the sector, including setting goals and targets. This has been successfully achieved in areas such as mining, banking and tourism. Such a Charter for a people-centred vision for biodiversity conservation and sustainable use across the landscape should be developed over a reasonable period of time and include all stakeholders in order to build trust between various stakeholder groups and manage expectations. It should include reference and commitments to elements such as government agencies' responsibilities to biodiversity conservation and people; an inclusive and representative organisational culture in conservation agencies; an understanding of the need to share costs and benefits more equitably (recognising that 'wealth' has major impacts on biodiversity through development pressures and over-consumption, and the need for redistribution) and promotion and support of benefit sharing beyond the narrow bioprospecting focus. It should clarify intentions of concessions and privatisation programmes in protected areas and include firm commitments to support income diversification and opportunities for local income generation. The process should explore the links between biodiversity, socio-economics and cultural-spiritual traditions, and the links between biodiversity and security. It should recognise different ethics and value systems.

ACTIVITY 2.2.6

Strengthen the co-ordinating role of the South African National Biodiversity Institute (SANBI), particularly in biodiversity information collation and management, biodiversity research, biodiversity planning, and bioregional programmes

SANBI was established in terms of NEMBA on 1 September 2004. Previously the National Botanical Institute, SANBI's broadened mandate relates to all components of biodiversity. A key function of SANBI is co-ordination of research, data management, distribution and application of data for decision making purposes, and assisting with the development

Institutions with biodiversity-related responsibilities and programmes should be effective, efficient and adequately capacitated.

and monitoring of a new suite of biodiversity management plans. Many institutions play a role in biodiversity research and knowledge management. These require overall co-ordination, to ensure that the necessary capacity exists to collate biodiversity data at genetic, species and ecosystem levels, and that research supports planning and decision-making.

ACTIVITY 2.2.7

Document and disseminate lessons learned for co-operative governance, building on replicable successes of existing biodiversity programmes where appropriate

A number of biodiversity-related programmes that rely on cross-sectoral and multi-agency partnerships for effective implementation have been or are being developed in South Africa, for example Working for Water and Cape Action for People and Environment. Existing programmes provide lessons on best practice for co-operative governance which could be applied more broadly, and which should guide implementation of other programmes for biodiversity conservation and sustainable use.

OUTCOME 2.3

Institutions with biodiversity-related responsibilities and programmes are effective, efficient and adequately capacitated

There is general recognition that DEAT has overall responsibility for implementation of the NBSAP and the National Biodiversity Framework, and that SANBI will play a major role, especially with many of the technical aspects. National departments such as the Department of Water Affairs and Forestry and the Department of Agriculture are also key roleplayers, as are provincial conservation agencies and planners. It is particularly important that municipalities have the capacity to integrate biodiversity considerations into their spatial and economic planning and environmental management programmes. It is necessary to define what is meant by "effective, efficient and adequately capacitated" and identify measurable indicators. It is also necessary to clarify differences between facilitation and actual implementation, and put together a clear matrix or framework of all the various mandates and requirements.

ACTIVITY 2.3.1

Perform self-assessment of capacity to implement the National Biodiversity Framework in relation to the geographic and thematic priorities in the Framework, and refocus activities, re-allocate resources and develop capacity according to the priorities in the Framework

A wide range of government departments in all spheres of government, organs of state and other organisations are likely to be involved in implementation of the National Biodiversity Framework. It is important that these implementing agencies have the necessary capacity and that their operations are aligned with the priorities that have been identified. Various institutions should assess their capacity requirements and develop and implement human resource development plans to fill the needs identified. This may relate to numbers of staff, skills, or other resources. A number of generic skills gaps and human resources shortages were identified through the NBSAP process, including general management and information technology skills.

Specific areas of expertise required in the sector include biosystematics, extension services for biodiversity management outside of protected areas and business skills to realise the value of protected area assets. These needs should be prioritised, through training and capacity building programmes. Capacity assessments should be integrated, recognise 'turf' issues, and clarify concerns about existing and future budgetary requirements. They may not necessarily be limited to the traditional role of each department,

In order to make best use of scarce resources, available resources (including human and financial resources) for biodiversity conservation should be used as efficiently as possible. This implies that overlaps and inefficiencies should be identified and measures taken to improve efficiency. This could include a review of institutions in the future, with a view to streamlining and amalgamation where appropriate.

ACTIVITY 2.3.2

Provide technical support to municipalities to integrate biodiversity into planning and environmental management

In order to 'mainstream' biodiversity at local level, biodiversity must be integrated into land-use planning and environmental management. Local government is a key roleplayer in the management of biodiversity and mitigation of threatening processes. However, many local authorities are unable to cope with their main function of service delivery and local economic development, and note that management of biodiversity will require additional resources that they do not have. There is a need to identify ways that national and provincial spheres of government and other institutions can assist and support local municipalities, in partnership with SALGA. A co-ordinated programme of capacity building and support for local authorities should be developed and implemented, while existing initiatives such as conservation planning handbooks and maps for local authorities and planners should be supported and expanded. This includes guidelines, policy and procedures that focus on planners and local authorities, building on lessons from existing products and projects that are being undertaken as part of bioregional programmes such as C.A.P.E. and STEP.

ACTIVITY 2.3.3

Strengthen the capacity of existing and emerging NGOs and community-based organisations in the biodiversity sector, with an emphasis on representivity

Biodiversity is important to everyone's lives, and all citizens and residents of South Africa should play a role in conserving our biodiversity and making sure it is used wisely. NGOs and community-based organisations are important allies and partners in conservation. Many require capacity building, assistance with assess to resources (such as finance, materials) and information sharing.

ACTIVITY 2.3.4

Maximise opportunities for civil society and community involvement in implementation and monitoring of the National Biodiversity Framework

While government is responsible for development of policy and legislation, implementation requires participation and partnerships to be developed at many levels. Government must identify opportunities and incentives for partnerships and facilitate the involvement of civil society and communities in biodiversity management and monitoring.

ACTIVITY 2.3.5

Assess the impact of HIV/AIDS on institutional capacity in the biodiversity sector and implement an appropriate strategy to address this

As with all sectors in South Africa, morbidity and mortality due to the HIV/AIDS pandemic is likely to have a serious impact on institutional capacity and effectiveness in the biodiversity sector. The issue needs to be recognised and planned for, and appropriate policies and strategies implemented.

ACTIVITY 2.3.6

Implement an ongoing programme to strengthen enforcement, including voluntary and mandatory compliance mechanisms

Ideally, law enforcement should be the last resort to ensure implementation of policy and legislation. Awareness raising and incentives should encourage voluntary compliance and self-regulation where possible. Government departments and agencies at all levels need to have a shared understanding and interpretation of legislation and associated regulations and the requirements for implementation, including enforcement. To be implemented, NEMBA should be well understood and supported, especially at provincial and local government level, including guidelines and support for implementation. A clear interpretation would guide the development of complementary/subservient legislation such as provincial Ordinances. A number of areas have already been identified where compliance and enforcement need to be strengthened and where joint enforcement should be implemented, such as harvesting of threatened resources, regulations on land-use change, EIAs, IEM, translocations and invasive alien species. Legislation and associated regulations administered by DEAT (such as NEMBA), DWAF (such as the National Forest Act and National Water Act) and the Department of Agriculture require the issuing of permits, while NEMBA provides for an integrated permitting system. The efficiency of the various permitting processes should be assessed and the processes rationalised and standardised. Enforcement of regulations and monitoring of compliance needs to be assessed and improved on an ongoing basis.

ACTIVITY 2.3.7

Integrate enforcement functions relating to biodiversity management into the mandates of the Environmental Management Inspectors

NEMBA falls under the framework of NEMA and must be read in conjunction with NEMA. Enforcement of the Act is therefore captured under the NEMA Amendments. The NEMA Amendment Act, 2003 (Act 46 of 2003) provides for the designation of Environmental Management Inspectors (EMIs). A range of officials in organs of state at all spheres of government could be designated as EMIs, including officials of the SA Police Service, Customs, provincial conservation departments and municipalities.

ACTIVITY 2.3.8

Ensure that the mechanisms for fair decision-making and conflict management provided for in NEMA are able to address disputes regarding conservation and use of biodiversity

Biodiversity plays a role in people's lives in many ways. There are many stakeholder groups with diverse interests, which can lead to conflicts over decisions regarding how biodiversity is used, managed and conserved. These include, for example conflicts and disputes relating to access to indigenous biological resources and benefit sharing; conflicts of interest between various sectors regarding control of invasive alien species; conflicts between national and provincial biodiversity priorities and local development plans and ethics; breakdowns in agreements between stakeholders, such as benefit sharing agreements or protected area management plans; or disagreements regarding decisions based on EIAs. Clarifying rights (see Strategic Objective 4) allows for agreements between stakeholders, such as public-private-community partnerships, but there may be a need for independent mediation in disputes if stakeholders do not stick to these agreements.

Biodiversity plays a role in people's lives in many ways.

ACTIVITY 2.3.9

Develop appropriate record keeping, monitoring and auditing procedures to enable assessment and review of the effectiveness of legislation and associated regulations

The implementation and effectiveness of biodiversity-related regulations should be regularly assessed. For example, effective implementation of CITES provisions requires a nationally co-ordinated database and computer-based permitting system that ensures inter-provincial alignment and national monitoring and reporting.

OUTCOME 2.4

Financial resources for biodiversity management are adequate, and effectively and efficiently used

While there has been a large increase in the amount of funding allocated to the environmental sector over the last ten years, there is a need to co-ordinate and manage these resources more efficiently and effectively. However some provincial conservation agencies, departments and municipalities are not adequately funded. Improving efficiency in some areas should not be used as a reason to reduce overall financial support for conservation, but is rather intended to ensure that funds are adequate and are targeted at areas of greatest need. Improving efficiency and sourcing additional funds does not minimise the important role that government needs to play in ensuring that biodiversity, which is a public good, is conserved and well-managed.

ACTIVITY 2.4.1

Determine the costs of implementation of the National Biodiversity Framework, for national, provincial and local spheres of government, and develop an affordable, prioritised and phased approach to implementation

In order to ensure that financial resources for biodiversity management are adequate, it is important to quantify the cost of conserving biodiversity at national and provincial levels in the public benefit. The development of the National Biodiversity Framework should include an assessment of the costs of implementing it. This includes an estimate of budgets and an assessment of where the funds might come from. In the longer term this could include financing mechanisms linked to provision of ecosystem services.

ACTIVITY 2.4.2

Provide financial support/mechanisms to municipalities to encourage conservation of biodiversity, with a particular focus on priority areas

Property rates are a key source of revenue for municipalities, and developing property is the main opportunity available to local municipalities to increase their rates base.

Property rates are a key source of revenue for municipalities, and developing property is the main opportunity available to local municipalities to increase their rates base. Often this development impacts negatively on biodiversity. Innovative ways must be found to encourage municipalities, developers and landowners to conserve biodiversity, such as through rates rebates and payment schemes for ecosystem services. Direct support to municipalities to afford rate rebates might be important, especially in biodiversity priority areas.

ACTIVITY 2.4.3

Allocate and use national and provincial public sector budgets more effectively to ensure and reward good biodiversity management practices

There is a need to investigate ways whereby existing government budgets can be targeted more effectively to support biodiversity conservation. Incentive schemes could be introduced for national and provincial government departments as well as municipalities, based on environmental and biodiversity performance criteria (for example, make some percentage of government appropriations or grants performance-related with respect to biodiversity management and conservation). Successful conservation programmes, including community led initiatives, should be rewarded and receive greater financial support. Appropriate resources and capacity need to be allocated to co-ordinating biodiversity functions between DEAT, DWAF, DoA and provincial agencies, and for the submission and evaluation of EIPs. Poverty relief funding and expanded public works programmes could be more closely aligned with biodiversity conservation objectives in priority areas. It is especially important that the operations of one government department or organ of state do not impact negatively on those of other departments. There are many such examples, e.g. roads agencies and municipalities planting invasive alien trees that then need to be controlled by environmental departments.

ACTIVITY 2.4.4

Increase the pool of non-state resources available for conserving and managing biodiversity

Biodiversity is a public good that benefits society as a whole, regardless of who is covering the costs of management. Given the unequal spread of these benefits and costs, it is important that those who benefit more from biodiversity, or those whose actions lead to loss of biodiversity, should contribute more to management and conservation of biodiversity. Mechanisms for the private sector to contribute money to the biodiversity sector need to be improved (e.g. by requiring significant financial 'bonds' before authorising large developments that will impact on biodiversity, or by exempting donations for biodiversity management from tax). Mechanisms to generate and capture revenue from ecosystem services (e.g. water production) for biodiversity management must be identified and developed. Existing funds (such as the Marine Living Resources Fund and Mining Rehabilitation Fund) and planned funds (such as the Bioprospecting Fund) should be expanded and funds channeled effectively, for example to align with biodiversity priorities (geographic or thematic). Biodiversity priorities need to be presented to donors (international and national), who should be encouraged to fund according to geographic and thematic priorities identified in the National Biodiversity Framework. This would enhance effectiveness and efficiency, particularly through improved co-ordination of government to government donor funding (i.e. overseas development aid, bilateral and multilateral funding). Government can also play an important role in

Biodiversity is a public good that benefits society as a whole, regardless of who is covering the costs of management.

facilitating access to donor funding, for example by providing information on funding opportunities to provinces, municipalities, NGOs and communities, and by building capacity in these organisations to secure and manage donor funds. It is important to note that gaining access to donor funds does not reduce government's fiscal responsibility for environmental management and biodiversity conservation, and should not be seen as 'budget substitution', but rather as additional funds for projects.

OUTCOME 2.5

Information management systems, research priorities, and monitoring and evaluation frameworks are in place and effectively supporting biodiversity management

Many activities relating to research, planning and monitoring are included throughout the Strategy, including decision support for implementation to achieve particular Strategic Objectives and Outcomes. This Outcome focuses mainly on decision support at a national level.

ACTIVITY 2.5.1

Identify major gaps in our knowledge and understanding of biodiversity through a collaborative process, design collaborative programmes that fill these gaps, and ensure that biodiversity inventories and atlases meet the requirements of bioregional planning and monitoring

Biodiversity includes diversity at the level of landscapes, ecosystems, habitats, species and genes. There is a need to understand all these aspects to better manage the impact of human activities on biodiversity. Cataloguing this knowledge will help to identify the gaps in knowledge that must be filled through collaborative research. Such an inventory of our biodiversity enables the establishment of a baseline, which facilitates the noting of positive or negative changes. While the focus on the past has been on research and monitoring at the level of species, scientific understanding needs to be extended to include diversity at the level of landscapes, ecosystems and ecological processes, as well as genetic diversity. Lack of spatially explicit research on ecological and evolutionary processes is one of the major gaps in biodiversity knowledge. Research programmes to fill the gaps in knowledge and understanding of biodiversity should be designed and implemented collaboratively, and research findings should be made available in such a way that they are useful for planning, management and decision-making, at various levels. This activity is closely linked to co-ordination of biodiversity-related research and monitoring and requires adequate institutional capacity.

ACTIVITY 2.5.2

Update South African Red Data Lists and implement a co-ordinated long-term programme to update these data regularly

Red Data Lists have been published for certain taxonomic groups in South Africa, such as mammals, birds, amphibians and plants. However, compilation and publishing of these lists has been largely *ad hoc*, with limited resources and infrequent updating. The huge data requirements mean that a co-ordinated long-term programme is needed to fill the gaps and regularly update the data, so that Red Data Lists can provide a reliable source of information for decision-makers, and better contribute to longer term monitoring of the rate of loss of biodiversity at a species level. Red Data Lists should include an assessment of the cause of a species' conservation status - so that the research can assist in the identification of appropriate interventions. Some of these interventions could be implemented through NEMBA.

ACTIVITY 2.5.3

Establish and maintain accessible data and information systems to inform strategy, action and reporting

Research and monitoring frameworks play an important role in informing policy, strategy and action, and therefore need to be accessible to the scientific community and to planners and decision-makers. This information should include metadatabases on biodiversity research, management and monitoring initiatives in South Africa. Relevant information on the status of South Africa's biodiversity and assessment of measures to conserve biodiversity needs to be collated timeously and in a format required in order to meet obligations and reporting requirements of multilateral environmental agreements, including the Convention on Biological Diversity, CITES, Ramsar and others. In addition, national legislation requires that the Minister of Environmental Affairs and Tourism reports to Cabinet on the status of biodiversity. Options for electronic information sharing, especially metadabases (such as a Clearing House Mechanism or the SA Biosystematics Initiative), should be explored. There is a need to overcome issues of standardisation and compatibility of data; questions of access to data held by a wide range of organisations; and effective management of databases. This could be achieved through MoUs and protocols.

ACTIVITY 2.5.4

Establish a monitoring and evaluation framework (including indicators and thresholds) for ecosystems and species, with a particular emphasis on those that are threatened

A national collaborative framework for monitoring and evaluation needs to be developed and implemented, so that changes to biodiversity can be effectively and efficiently tracked. This may require developing a set of high-level biodiversity indicators and thresholds, based on existing sets of indicators for example in State of Environment Reports, Environmental Management Plans and Environmental Implementation Plans and other research programmes that use indicators. It will also require guidelines for applying the indicators and thresholds, which can be used by all departments, provinces, municipalities, environmental assessment practitioners, researchers and academics, so that assessment, monitoring and reporting is streamlined and efficient. The monitoring and evaluation framework should build on current initiatives, such as various programmes run by NGOs and research institutes, the River Health Programme and other initiatives. This framework could prioritise threatened ecosystems initially, but should gradually be expanded to include all ecosystems, to act as an early warning system and to prevent further species or ecosystems becoming threatened. This framework should also assist in monitoring and reporting on the achievement of conservation and sustainability targets for biodiversity.

ACTIVITY 2.5.5

Establish a monitoring and evaluation framework (including indicators and thresholds) for invasive alien species, GMOs, loss and degradation of natural habitat, climate change and other threatening processes on biodiversity

Programmes and actions that are planned for and implemented to mitigate and control threatening processes need to be monitored in order to assess their effectiveness. Such a monitoring framework should also enable strategies and plans to be adapted accordingly.

ACTIVITY 2.5.6

Develop national norms and standards for monitoring management effectiveness in protected areas, with an emphasis on biodiversity objectives

Protected areas are the cornerstone of biodiversity conservation efforts and their relatively undisturbed state makes them important benchmarks for monitoring change across the landscape. However, simply declaring certain areas as protected areas is not enough to safeguard biodiversity. There must be a way of assessing management effectiveness in protected areas to ensure that biodiversity objectives are being met.

ACTIVITY 2.5.7

Develop and implement effective mechanisms for review and revision of research and monitoring programmes

Implementation of the NBSAP and achievement of our objectives will take time and is an ongoing process. Research and monitoring programmes should be regularly reviewed so that they can be adapted appropriately as required.

OUTCOME 2.6

A comprehensive and proactive national communication, awareness raising and advocacy strategy reaches all targeted sectors and facilitates conservation and wise use of biodiversity

Biodiversity affects all human life, and everyone should take responsibility for ensuring conservation and wise use of this precious natural capital. This includes all decision-makers, especially those in powerful positions in government. An awareness-raising campaign will need to take a targeted approach as relatively simple, yet targeted initiatives are likely to be most successful in reaching specific sectors.

ACTIVITY 2.6.1

Develop and implement a co-ordinated and comprehensive communication, awareness and advocacy campaign to reach key decision-makers in Parliament

Decision-makers at the highest level of government need to understand the implications of loss of biodiversity for the economy and people's lives, and the need to integrate biodiversity management objectives across all sectors.

ACTIVITY 2.6.2

Design and implement a creative and innovative advocacy and communication strategy to make biodiversity concerns relevant to communities throughout South Africa

People on the ground are the main custodians of biodiversity. There is a need to develop and implement innovative mechanisms for communicating with and working with communities, both urban and rural, rich and poor, to address management of impacts of use and development on biodiversity. This should include awareness of over-consumption as a major pressure on biodiversity, including water and energy

consumption, and the need to implement demand-management measures. Key groups to work with include organised labour (unions) to promote biodiversity considerations and the links to environmental health, community health, rights and responsibilities; and the religious community to promote the importance of biodiversity and the need to develop a stewardship ethic.

ACTIVITY 2.6.3

Design and implement focused awareness campaigns on threatening processes, including invasive alien species, GMOs and climate change, that aim to change behaviour in the public and private sectors

The results of research on the impacts of threatening processes and their management, in South Africa and internationally, need to be appropriately incorporated into the national awareness, education and advocacy campaigns.

ACTIVITY 2.6.4

Design and implement biodiversity education programmes

Although environmental education programmes have been developed and integrated into the general school curriculum, the profile of biodiversity education needs to be improved and existing programmes, such as those run by SANBI, should be strengthened and expanded. In addition, biodiversity education should also be factored into higher education curricula, including tertiary education. A significant opportunity exists to educate consumers about the impacts that their choices have on biodiversity. Consumer driven programmes for sustainably harvested products or species can send important market signals encouraging biodiversity-compatible production methods.

Outcome 2.7

Proactive engagement and co-operation with the international community enhances conservation and sustainable use of shared resources and globally important biodiversity in South Africa

South Africa has globally important biodiversity and an obligation to the international community to conserve and use these biological resources wisely. Many species and ecosystems cross international boundaries and it is necessary to co-operate with other countries, and especially neighbouring countries in southern Africa, to safeguard these shared resources. South Africa is signatory to many international agreements, conventions, treaties and protocols and has undertaken to honour these agreements. South Africa is a member of groups of countries such as the African Union, the Southern African Development Community (SADC), the Commonwealth, and the Group of Like-Minded Megadiverse

South Africa is signatory to many international agreements, conventions, treaties and protocols.

Countries. South Africa intends to use the agreements proactively, and to continue to develop partnerships with other countries, in order to pursue its national agenda.

ACTIVITY 2.7.1

Align policies, strategies and programmes of South Africa, the Southern African Development Community (SADC) and African Union, including the New Partnership for Africa's Development (NEPAD), where possible and strategic

The biodiversity of the continent is an asset and can play a strategic role in development. Conservation and sustainable use of biodiversity requires management across political and administrative boundaries. It is therefore important to align policies and their implementation, especially for resources that cross boundaries, such as water, migratory birds and animals, GMOs and invasive alien species. It is also important to develop common positions and lobbying strategies where necessary, for example with regard to bioprospecting, biosafety and trade issues.

ACTIVITY 2.7.2

Develop partnerships and co-operative arrangements with neighbouring countries regarding shared resources

It is especially important to align policy and practice with neighbouring countries and other countries in southern Africa. This includes partnerships and co-operation on research, training and capacity building programmes, sharing of data and taking neighbouring countries' needs into account, especially with regard to shared water resources and marine resources. Coastal and deep-water fisheries are important renewable natural resources for South Africa and our neighbouring countries and contribute to food security, livelihoods, job creation, tourism development and economic growth. South Africa needs to work closely with Namibia and Mozambique in particular, to safeguard marine resources and co-operate on aspects such as research, management, monitoring and enforcement. South Africa is also an important roleplayer in the Antarctic region.

ACTIVITY 2.7.3

Establish coalitions with groups of like-minded countries to ensure that South Africa's biodiversity management objectives are not prejudiced by international trade agreements

Trade agreements and other aspects of globalisation can have significant impacts on biodiversity in South Africa, which

South Africa needs to work closely with Namibia and Mozambique in particular, to safeguard marine resources.

must be understood and anticipated, and measures put in place to minimise these impacts.

ACTIVITY 2.7.4

Strengthen capacity for international negotiation by developing common positions with other countries where possible and strategic

South Africa can play an important catalytic role in the international community and developing common positions on key policy issues will strengthen this role. In particular, South Africa should seek to strengthen its position by aligning with a common African position.

ACTIVITY 2.7.5

Implement a co-ordinated programme to build capacity across all relevant departments and institutions to engage with processes relating to multilateral agreements

There is a need to build capacity, including negotiation skills, and to co-ordinate and prepare inter-disciplinary teams to attend inter-sessional and technical meetings to understand issues and processes, before attending Conference of the Parties and other high level meetings.

ACTIVITY 2.7.6

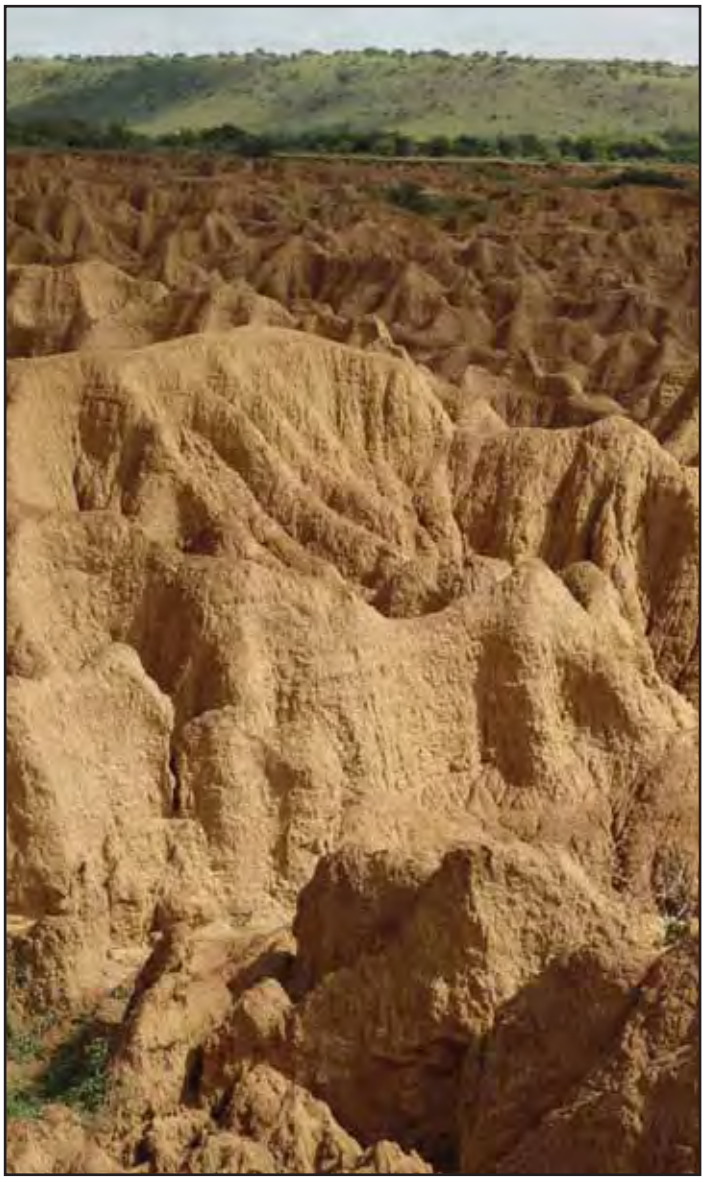
Develop, implement and strengthen programmes for international scientific collaboration, sharing of information and technology transfer

South Africa has in the past played a significant role in research and capacity building in the region, in fields such as biodiversity, climate change, invasive species and biotechnology. Such programmes should be strengthened and expanded and particular attention paid to collaboration and information sharing. At the same time, South Africa can learn much from its neighbours, for example with regard to sustainable use and land management.

SO 3.

Integrated terrestrial and aquatic management minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security

The benefits from biodiversity at a landscape level (often referred to as ecosystem services or environmental services) underpin the economy and human well-being. Socio-economic security is ultimately dependent on well-functioning ecosystems. Drivers of (negative) environmental change include processes such as the spread of invasive alien species, GMOs and other forms of land degradation, including soil erosion, caused by destruction of natural vegetation and poor land management. Land degradation, including biological invasions, will be worsened by climate change. Integrated and adaptive management must be applied to processes that threaten biodiversity to ensure a continued flow of ecosystem goods and services. There are existing strategies and programmes, such as catchment management strategies, soil erosion management programmes and programmes to remove invasive alien species, which can be strengthened through more systematic integration of biodiversity priorities in their operations. This Strategic Objective is linked to other Strategic Objectives, as it is linked to macroeconomic issues, to sustainable livelihoods issues and to conservation.



Drivers of negative environmental change include processes such as the spread of invasive alien species, GMOs and other forms of land degradation, including soil erosion.

Although State of Environment Reports refer to "drivers" rather than "threats" and NEMBA refers to "threatening processes", these are essentially both referring to negative impacts on biodiversity caused by or linked to human activity. Major threats to biodiversity include habitat transformation, land degradation, invasive alien species, climate change, overexploitation, contamination and loss at a genetic level and pollution.

Outcome 3.1

National initiatives to manage terrestrial and aquatic ecosystems are co-ordinated, developed and implemented with full stakeholder participation to contribute to sustainable socio-economic development

This Outcome has a focus on ecosystem services, managing threatening processes and improving security. This has a different emphasis to the species management programmes envisaged in Strategic Objective 4, but they are inter-linked, as species are part of ecosystems, and well-functioning ecosystems are necessary for sustainable livelihoods.

Activity 3.1.1

Integrate biodiversity management objectives into national and provincial programmes to combat land degradation

Biodiversity makes a significant contribution to livelihood security, through direct use as well as through the provision of ecosystem services, such as clean water and pollination. Degraded ecosystems may lose productivity and become less able to provide benefits, especially during times of stress such as droughts. Existing national land and natural resource management programmes such as LandCare, Working for Water, Working for Wetlands, CoastCare and Working on Fire should be supported and their effectiveness enhanced by integrating biodiversity considerations into land management. There needs to be multi-agency development of integrated land-use and management plans, which take various sectoral considerations into account, and which can be implemented by a number of agencies in a co-ordinated way. This includes programmes to rehabilitate degraded ecosystems and manage bush encroachment.

Activity 3.1.2

Ensure that Catchment Management Agencies integrate terrestrial and aquatic biodiversity management in their operations

Production sectors such as agriculture and commercial forestry rely on ecosystem services like water production, flood attenuation and nutrient cycling, even though they transform the environment by removing indigenous vegetation. Water supply is severely limited in South Africa, and most river systems have been transformed. Land-use and terrestrial management in the entire catchment affects the functioning of aquatic ecosystems, including rivers, wetlands, estuaries and coastal and marine environments.

The first Catchment Management Agency (CMA) has been established and another 18 will follow. CMAs are important statutory bodies that can influence land-use planning. The first catchment management strategies can be expected before 2010. Catchment Management Strategies therefore provide an important opportunity to integrate biodiversity management with overall management of terrestrial and aquatic ecosystems.

Activity 3.1.3

Determine, implement and monitor the ecological reserve for all priority rivers and estuaries

The National Water Act, 1998 (Act 36 of 1998) administered by the Department of Water Affairs and Forestry, contains important provisions for management of aquatic biodiversity, which should be effectively implemented. The research on ecological reserve determinations must be strengthened, speeded up and prioritised according to priority rivers and estuaries as determined by the river and estuarine components of the National Spatial Biodiversity Assessment and the DWAF-CSIR-WRC National Freshwater Biodiversity Initiative.

Activity 3.1.4

Integrate biodiversity objectives into the national river classification system by linking the biodiversity status of rivers to regulations and guidelines for water management and to land practices and environmental management in the quaternary catchment

Regulations and guidelines governing water quality management and those governing land conversions and land management (such as whether a landowner is permitted to build farm dams or drain wetlands) should be better aligned. This integrated terrestrial and aquatic management is particularly important in biodiversity priority areas. For example, river main stems need to be managed in a way that allows for connectivity between tributaries that have been identified as biodiversity priorities.

Integrated terrestrial and aquatic management is particularly important in biodiversity priority areas.

Activity 3.1.5

Implement integrated coastal management programmes that address biodiversity management objectives in production activities in the coastal zone

Integrated terrestrial and aquatic management is necessary to reduce indirect pressure on estuarine ecosystems, such as reduced water flow and increased silt. In addition, targeted interventions are necessary to address direct pressures on estuaries and the coastal zone, such as pollution, habitat loss through construction and urban expansion and over-exploitation of coastal and estuarine species. This requires adequate capacity at provincial and municipal level.

Activity 3.1.6

Develop and implement integrated programmes to minimise impacts on marine biodiversity

Marine biodiversity is impacted on by a range of human activities, some land-based. These impacts include extractive marine living resource use, pollution (including oil pollution, shipping related pollution, and many land-based sources of pollution), mining, coastal development, climate change, poor catchment management, non-extractive recreational activities, invasive alien species, transgenic fish and mariculture. Addressing biodiversity management objectives in marine biozones therefore requires a range of interventions, most of which will require cross-sectoral integration and partnerships.

Outcome 3.2

Key production sectors and industries integrate biodiversity into their production and service standards

This Outcome requires the various sectors that impact on biodiversity to implement effective changes at an operational level. Changes at a macro-economic level, such as elimination of perverse incentives, or payment for ecosystem services, together with increased awareness of biodiversity considerations, effective enforcement of legislation and application of the principle of co-operative governance, are highlighted in Strategic Objectives 1 and 2, and are necessary to main-

There are many ways that the agricultural sector can mitigate impacts on aquatic ecosystems.

stream biodiversity into the key sectors highlighted below. All the sectors discussed below should deal with threatening processes across the landscape, and pay particular attention to operations in national biodiversity priority areas.

Activity 3.2.1

Include biodiversity considerations in guidelines and best practice codes of key agricultural industries, to mitigate negative impacts of agricultural production on biodiversity and encourage sustainable agricultural practices

Most of the land area in South Africa is zoned for agricultural use. Agriculture is important for food security and for job creation in rural areas. However, agriculture has major negative impacts on biodiversity, especially where natural vegetation is completely cleared for crops. Agriculture also has major impacts on aquatic ecosystems. There are many ways that the agricultural sector can mitigate these impacts, such as avoiding cultivation of marginal lands; retaining natural corridors on farms; conserving wetlands; minimising return flows to rivers of irrigation water containing agricultural chemicals; maintaining stocking rates at or below carrying capacity; judiciously controlling damage-causing animals and minimising ecological disruption, such as through fire management and control of invasive alien species; and reducing contamination by GMOs. The agricultural sector has an important role to play in combating desertification and adapting to climate change. It also has an important role to play in preserving the genetic diversity of plants and animals to ensure resilience and adaptability for future generations.

Activity 3.2.2

Include biodiversity considerations in forestry industry guidelines and best practice codes to mitigate negative impacts of commercial forests and harvesting of natural forests on biodiversity and encourage sustainable forestry practices

Commercial forestry plantations in South Africa, of alien species such as gums, pines and acacias, have transformed vast tracts of land. The forestry industry impacts on biomes such as grasslands, forests and fynbos, and is a major user of freshwater and groundwater resources. The Department of Water Affairs and Forestry has initiated the National Forestry Programme and developed Criteria, Indicators and Standards for Sustainable Forestry. These and other initiatives need to be reviewed and adapted as necessary to ensure they take biodiversity fully into consideration, especially in national priority areas. For example, norms and standards must be developed for conservation of priority elements of biodiversity across the landscape, rather than dealing with such issues on a farm by farm (or plantation by plantation) basis. Many of the species planted by the forestry industry have become serious invaders in South Africa, such as black wattle, and the industry must be a full participant in any programme to manage and control invasive alien species. In addition, experiments on genetically modified trees have been conducted in South Africa, with unknown impacts on indigenous forest biodiversity.

ACTIVITY 3.2.3

Include biodiversity considerations in mining regulations and guidelines and best practice codes to mitigate negative impacts on biodiversity and encourage sustainable mining practices

Many partnerships already exist between the mining and biodiversity sectors and these could be built on. There are requirements for mining rehabilitation funds, which should

be more effectively used to mitigate impacts on biodiversity, set aside and manage important areas for biodiversity and rehabilitate impacted areas, especially wetlands and other aquatic systems. The mining sector has an important role to play in maintenance of biodiversity corridors, especially in national biodiversity priority areas.

ACTIVITY 3.2.4

Include biodiversity considerations in fishing guidelines and best practice codes to mitigate negative impacts on biodiversity and encourage sustainable fishing practices

Fisheries are a renewable resource and important for job creation, food security and economic growth. However, fishing practices can have serious detrimental effects on non-target species and on marine habitats, such as when the sea bed is trawled for fish. In addition, fisheries off-takes should be within sustainable limits. Industry co-operation is crucial.

ACTIVITY 3.2.5

Include biodiversity considerations in property development and real estate guidelines and best practice codes to mitigate negative impacts on biodiversity

Expansion of housing estates and resort development is a substantial contributor to habitat loss and degradation in many biodiversity important areas, particularly in the coastal zone. Much of the impact can be minimised through careful planning and avoidance of sensitive areas. Ironically, it is scenic beauty and biodiversity that is driving the development process and the industry would benefit from integration of biodiversity management objectives into plans and operations.

OUTCOME 3.3

A multi-agency national programme deals with the full suite of impacts posed by invasive species across the landscape and seascape

Invasive species are a problem in many sectors (including agriculture, fisheries, water and health) and a national programme to deal with all these aspects is necessary. However, it is essential that this national programme has a strong biodiversity component and emphasises its importance, i.e. biodiversity should be the main criterion for prioritising areas for work. There are also indigenous species, which are regarded as alien when translocated outside their natural distribution ranges and should be regulated and managed as they have the potential to become invasive, such as freshwater fish introduced into catchments where they would not occur

Invasive species are a problem in many sectors.

naturally. South African legislation deals with both alien and invasive species. NEMBA regards indigenous species as alien when these are translocated outside their natural distribution ranges or when a species is not indigenous to South Africa, while invasive species are defined as species whose establishment and spread outside of its natural distribution range threaten ecosystems, habitats or other species or have demonstrable potential to threaten ecosystems, habitats or other species and which may result in economic or environmental harm or harm to human health. The purpose of Chapter 5 of NEMBA is, among others, to prevent unauthorised introduction and spread of alien species and invasive species to ecosystems and habitats; and to manage and control alien or invasive species to prevent or minimise harm to biodiversity. Various pieces of legislation deal with related matters, although the precise definitions and interpretations may vary. This outcome emphasises invasive species, i.e. those that threaten ecosystems, habitats or other species.

It is necessary to pay particular attention to aquatic ecosystems and prevent inter-basin (inter-catchment) transfer of fish and other aquatic organisms.

However, some invasive species do have important uses and contribute to the economy, and therefore need to be managed accordingly.

ACTIVITY 3.3.1

Ensure institutional co-operation and co-ordination at the operational level to deal with the full suite of impacts posed by invasive species

Invasive species pose such a serious threat to biodiversity in South Africa that all organs of state and all spheres of government have to work together to control and where possible, eradicate the threat. Institutional strengthening is needed to implement legislation and programmes, improve inter-departmental, inter-provincial and transboundary co-ordination and co-operation, and prevent unwanted introductions. There should be support for organs of state in meeting their obligations in terms of s76(2)(a) of NEMBA, especially local authorities in biodiversity priority areas. Mechanisms to encourage and support landowners, such as incentives and penalties and enforcement of regulations, are also required.

ACTIVITY 3.3.2

Prevent the introduction and spread of new invasive species into South Africa

Once invasive species have become established, the cost of control and eradication is enormous, diverting funds from important social and development needs. The uncontrolled spread of invasive species across our ecosystems can be likened to the spread of diseases caused by viruses or bacteria, or the spread of agricultural pests. A co-ordinated approach to prevent the introduction of new invasive species would include preventing the entry of pests and pathogens. Indeed, many species imported into the country carry pests and diseases, which can spread to indigenous species (for example, freshwater fish have been impacted in this way). It is necessary to pay particular attention to aquatic ecosystems, implement the recently developed ballast water policy and prevent inter-basin (inter-catchment) transfer of fish and other aquatic organisms. Equally, the commercial forestry, horticulture, agriculture and pet trade sectors should be regulated to prevent further unwanted introductions, and encouraged to implement programmes to limit and contain the spread when such introductions do occur.

ACTIVITY 3.3.3

Control and eradicate existing invasive species listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004), with an emphasis on urgent action in biodiversity priority areas

Existing programmes to control invasive species need to be strengthened, integrated and expanded. While progress in controlling some invasive alien species has been achieved in some areas, the focus to date has been on terrestrial plants (mainly trees). There is a need to expand this to include other plant species (such as grasses) and other taxa (such as fresh-water fish). There is a need to review current strategies, methods and tools, including decision support systems, for dealing with invasive species. An integrated and expanded national programme for control and eradication should be implemented, with a particular focus on biodiversity priority areas. This must include all government departments and organs of state. Enforcement of existing legislation on control of invasive species, including punitive measures to control introduction and spread, must be strengthened, including improved budgetary allocations and personnel. An integrated national programme should include guidelines for rehabilitation of damage resulting from invasive species as well as promote planting of indigenous species through rehabilitation schemes, tourism projects, development projects and along roads. This could link to the natural product sector and development of small, medium and micro-enterprises. Particular attention must be paid to integration of control and eradication plans into municipalities' Integrated Development Plans at both district and local levels.

ACTIVITY 3.3.4

Create economic opportunities linked to the control and management of invasive species

Existing programmes for the control of invasive species, in particular the Working for Water Programme, have focused strongly on employment, especially amongst the poorest and most marginalised sectors of society; provision of social benefits such as training and childcare support; and development of secondary industries to encourage sustainability. Many lessons have been learned which can be shared. The socio-economic benefits could be further expanded and improved on, including strategies for alternatives to invasive species used in areas where eradication is possible. There is also a need to link more closely with landowners (public, private and communal land), provide incentives and improve follow-up support such as support for rehabilitation. Education and advocacy is also important to raise awareness, promote a sense of responsibility amongst all South Africans and encourage action.

Outcome 3.4

An integrated national programme facilitates adaptation to the predicted impacts of climate change on biodiversity across the landscape and seascape

Climatic changes in the region are expected to impact on health, agriculture, water and biodiversity. Climate change modelling suggests a reduction of the area covered by the current biomes by up to 55% in the next 50 years. The largest losses are predicted to occur in the western, central and northern parts of the country. Species composition is expected to change, which may lead to significant changes in the

Expected changes in sea temperature because of climate change may increase the intensity and frequency of upwelling events, impacting on rocky shore ecosystems in South Africa.

vegetation structure in some biomes. Climate modelling predicts that most animal species will become increasingly concentrated in the proximity of the higher altitude eastern escarpment regions, with significant losses in the arid regions of the country. Some plant and animal species are predicted to become extinct. Expected changes in sea temperature may increase the intensity and frequency of upwelling events, changing near-shore currents and impacting on rocky shore ecosystems in South Africa.

Cabinet approved a National Climate Change Response Strategy in October 2004. While recognising the importance of mitigation, the NBSAP will deal mainly with adaptation aspects of the strategy, especially with regard to biodiversity.

ACTIVITY 3.4.1

Implement an integrated programme for climate change adaptation, with an emphasis on vulnerable ecosystems and sustainable livelihoods

An initial set of activities for climate change adaptation has already been identified in the Climate Change Response Strategy, which should be further developed and implemented. Most of these activities are already identified elsewhere in the NBSAP, as such activities are necessary to conserve and sustainably use biodiversity even in the absence of climate change. Climate change adaptation is linked to sustainable livelihoods and sustainable land and water management. The National Water Resource Strategy of 2004 should include adaptation measures for biodiversity, as well as supply and demand issues. Activities to ensure adaptation to climate change include maintaining existing vegetation cover, and avoiding land degradation and fragmentation of natural habitat, since plant dispersal and successful regeneration will become more difficult. Animal and plant breeders (wild and domestic) will rely more on indigenous breeds, which are better adapted to the climatic conditions. *Ex situ* conservation and seed and gene banks are already important conservation tools in South Africa and will become more important in the future. Contamination of these seed collections by GMOs must be avoided.

ACTIVITY 3.4.2

Ensure that the protected area network is designed to allow for long-term species and ecosystem responses to climate change

Climate change models predict that rangelands, particularly grasslands and areas that are already marginal, and biomes to the west and north of the country will be extremely vulnera-

To date no Environmental Impact Assessments have been carried out in South Africa to assess the actual and potential impacts of GMO field trials or commercial crop plantings on biodiversity in the southern African region.

ble to climate change. Freshwater and coastal ecosystems will be particularly vulnerable and need to be prioritised. Adaptation options for maintaining animal diversity include the implementation of a conservation area and corridor network that would buffer the effects of climate change. Mountains and uplands, and in particular the higher altitude eastern escarpment regions are especially important.

OUTCOME 3.5

Effective management and control measures minimise the potential risks to biodiversity posed by Genetically Modified Organisms

South Africa is a signatory to the Cartagena Protocol on Biosafety, and therefore has an obligation to implement an effective system to monitor and regulate trade in Genetically Modified Organisms (GMOs). Concerns have been raised about the possible negative impacts of widespread planting of GMO crops on South Africa's rich and unique biodiversity, and the need to strengthen legislation, decision-making, monitoring and enforcement. GMOs have potentially far-reaching impacts on biodiversity, but many of these impacts are not well known or understood yet. This underscores the need to take a precautionary approach to the release of GMOs into the environment, especially in biodiversity priority areas. It is important that policy and legislation between sectors is aligned, that adequate and relevant information on GMOs is made available to interested and affected parties and decisions regarding release of GMOs into the environment are transparent. The African Model Law on Biosafety provides an important standard, which could guide South Africa in giving effect to the Biosafety Protocol.

ACTIVITY 3.5.1

Ensure institutional co-operation and co-ordination to deal with the potential risks posed by Genetically Modified Organisms

GMOs may provide a range of benefits while at the same time posing risks. GMOs are therefore of interest and concern to a range of stakeholders and sectors, including agriculture, health and environment. To minimise risks and impacts, as with other threatening processes, there needs to be alignment of policy and legislation between sectors. There may be a need for a consultative forum or a national, multi-disciplinary working group to deal with biosafety issues in a transparent manner. SANBI is mandated by NEMBA to monitor and report regularly to the Minister of Environmental Affairs and Tourism on the impacts of any GMO that has been released into the environment, including the impact on non-target organisms and ecological processes, indigenous biological resources and the biological diversity of species used for agriculture. This will require research and monitoring programmes, and inter-sectoral co-operation, especially between the Departments of Agriculture, Health, Trade and Industry, Science and Technology, and Environmental Affairs and Tourism.

ACTIVITY 3.5.2

Develop and implement effective measures for management and control of potentially risky activities relating to Genetically Modified Organisms

Some of the impacts of GMOs are already known, but given the fact that GMOs are the result of relatively new technology, which is likely to grow and develop rapidly in future, many of the potential impacts remain unknown. This means that many activities associated with GMOs carry risks to both biodiversity and human health. These activities must be managed and the risks assessed, and measures put in place to minimise the known and unknown impacts. Despite these risks and uncertainties, to date no Environmental Impact Assessments have been carried out in South Africa to assess the actual and potential impacts of GMO field trials or commercial crop plantings on biodiversity in the southern African region. Existing procedures and guidelines for evaluating GMO permit applications need to be reviewed to ensure that environmental and biosafety concerns are adequately addressed. There is a need for GMO risk assessments to move beyond narrow desk-based assessments, which are typically done by the companies themselves, based only on limited research carried out in other countries. Risk assessments must be independent and should include actual research and data collection in the South African context. There is also a need for comprehensive and non-partisan EIAs or their appropriate equivalent to be carried out for GMOs, with full public participation. In addition, it would be useful to map current and planned GMO plantings, whether field trials or commercial crops, and include such data layers in the National Spatial Biodiversity Assessment, to determine possible 'no go' areas for GMOs and identify GMO-free zones.

ACTIVITY 3.5.3

Share information and provide support to ensure adoption and implementation of highest biosafety standards to minimise risks associated with Genetically Modified Organisms

Such support includes national training and capacity building programmes in EIAs, risk assessment and risk management

Managing pollution, especially of aquatic ecosystems, will have positive benefits for both people and biodiversity.

for safe transfer, handling, use and release of GMOs. Public education and awareness concerning the risks and benefits of biotechnology, including GMOs, should be promoted, and informed public debate encouraged. It is also important that not all research on GMOs be carried out by large companies. Publicly funded research (research in the public interest) must be developed. Government should invest in research on GMOs and build capacity for monitoring and risk assessment.

OUTCOME 3.6

Effective waste management and pollution control measures limit the impacts of pollution on biodiversity

Poor waste management and inadequate pollution control can have a serious impact on both natural ecosystems and human health. Managing pollution, especially of aquatic ecosystems, will have positive benefits for both people and biodiversity. Measures to address the impacts of pollution on biodiversity need to be included in the environmental management plans of sectors such as mining and agriculture, while municipalities have a particular role to play in the management of waste and pollution.

ACTIVITY 3.6.1

Implement effective waste management and pollution control measures, with particular emphasis on aquatic ecosystems in biodiversity priority areas

Sectors that must improve their waste management practices include mining (e.g. acid mine drainage, runoff from slimes dams), agriculture (e.g. pesticides poisoning, eutrophication of dams and rivers), urban areas and industries (e.g. sewage and drainage from landfills). In particular, municipalities must implement effective waste management plans and procedures, especially in biodiversity priority areas, to limit the impact of urban run-off, sewage and wastewater on aquatic ecosystems such as wetlands, rivers, estuaries and coastal and marine environments.

OUTCOME 3.7

Research and monitoring programmes support integrated management of terrestrial and aquatic ecosystems

ACTIVITY 3.7.1

Carry out research on the impact of all current and future threatening processes on biodiversity, and mechanisms for adaptation, management and mitigation of threatening processes, including invasive alien species, climate change, Genetically Modified Organisms, and production activities

Such research would assess current impacts and the risks posed by potential future impacts caused by loss and fragmentation of natural habitat, land degradation, harvesting, invasive alien species, climate change, GMOs, genetic contamination, loss of genetic variability among populations, species hybridisation, pollution, fires and floods. The risks and impacts will vary at different levels in different ecosystems and over time. The interactions and synergies between these processes also need to be understood. For example, global climate change is likely to exacerbate existing threats such as invasive alien species and land degradation, and the impacts are likely to be most severe for threatened ecosystems and for rare and already threatened species, or species with very specific habitat requirements, such as narrow-range endemics. Particular attention must be paid to biodiversity

priority areas. Existing research on invasive alien plants must be broadened to include terrestrial plants such as grasses, aquatic plants, terrestrial and aquatic vertebrates and invertebrates and micro-organisms. Such research includes identifying invasive alien species, maintaining databases and collecting invasive alien species. Climate change monitoring programmes have already been established in South Africa. Research and monitoring programmes, with community participation, are also needed to assist with adaptation to climate change, particularly in vulnerable areas. Given the predicted impacts of climate change on biodiversity, it may not be possible to conserve all species, and decision support to prioritise intervention may be needed. This could include the development of cost benefit analyses based on considerations such as potential importance, genetic variation and uniqueness of species. Special attention must be paid to climate change research, monitoring and adaptation in biodiversity priority areas. Aquatic ecosystems, including rivers, wetlands, estuaries, coastal and marine ecosystems, are likely to require special attention. Some terrestrial habitat types will be more vulnerable to climate change, while others may be more resilient, and management plans can be adapted accordingly. This requires the establishment of a long-term monitoring programme across the entire country. Research already underway should be strengthened and effective mechanisms established to consolidate research, assess the management implications, and communicate these to decision-makers.

ACTIVITY 3.7.2

Monitor and evaluate the impact of integrated management of terrestrial and aquatic ecosystems, to support adaptive management

In order to address the negative impacts that threatening processes have on biodiversity, monitoring, information sharing, and decision support is required so that land management practices can be adapted, especially in biodiversity priority areas, areas with known vulnerability to future climate change, and areas where local economies are dependent on natural resources. Research and monitoring information must be shared amongst all stakeholders and contribute to an adaptive management approach. Research into methods of prevention, control and eradication of invasive alien species; understanding impacts; risk assessment to determine potential threats; and monitoring to assess the level of success of interventions is needed. Monitoring and evaluation should inform management in an ongoing way.

Aquatic ecosystems, including rivers, wetlands, estuaries, coastal and marine ecosystems, are likely to require special attention.

SO 4.

Human development and well being is enhanced through sustainable use of biological resources and equitable sharing of the benefits

This Strategic Objective relates primarily to the benefits that people get from direct use of biological resources, whether at a household level (for subsistence or trade) or by sectors which are dependent on the renewal of these resources, and which will suffer economic losses if the resources are not well managed or are lost. This includes sectors such as eco-tourism, fishing, hunting and ranching (wildlife and domestic livestock). The term 'biological resources' refers to biodiversity at genetic and species levels.

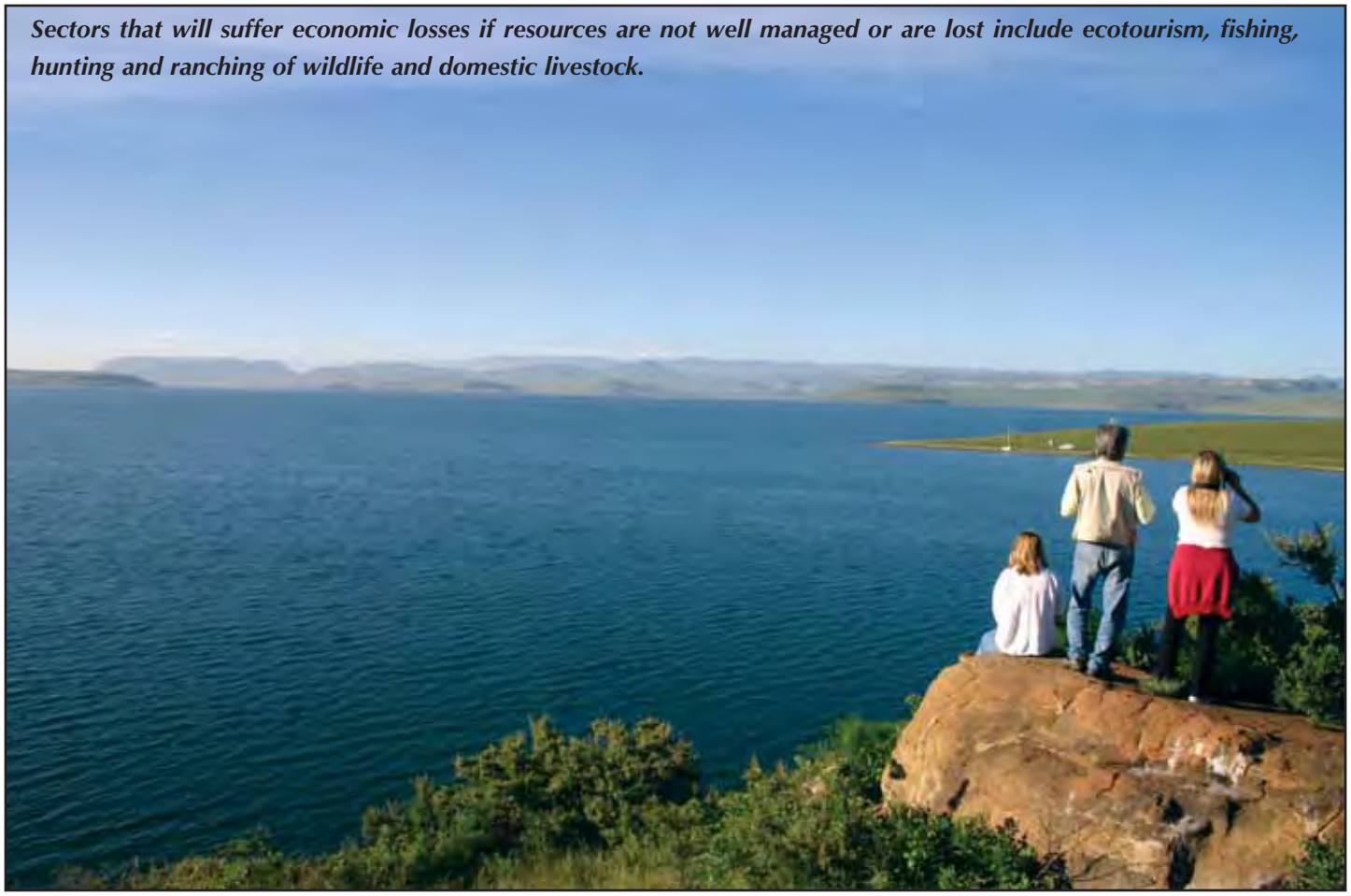
OUTCOME 4.1

An equitable access, rights and responsibilities regime promotes sustainable use of biological resources

Use of biological resources is widespread across South Africa, on state, private and communal land. However, South Africa's political history resulted in inequitable distribution of access rights, to land, water and biological resources. Cornerstones of the post-1994 political dispensation are redress for past wrongs and redistribution of resources, within the boundaries of principles such as protection of property rights. Rights of access and use need to be coupled with a renewed sense of ownership and responsibility for management of natural resources by all resource user groups. The focus of the Outcome is on access, use and management of biological resources, with a particular emphasis on species regarded as a priority due to socio-economic and/or ecological considerations. Prioritisation is necessary. Given the enormous scope of the issue and capacity and financial resource limitations it is unlikely that all use issues can be dealt with immediately. At the same time, it is recognised that socio-political issues such as land claims are constraining sustainable management in some areas, where communities are hampered by unresolved rights and tenure issues. It is also recognised that access issues are broader than direct use issues, and include promoting access to land, broadening access to protected areas, promoting access to information and ensuring informed participation in decision making. It is noted that tenure and access issues need to be addressed separately from intellectual property rights issues.

ACTIVITY 4.1.1

For priority biological resources, manage and, where



Sectors that will suffer economic losses if resources are not well managed or are lost include ecotourism, fishing, hunting and ranching of wildlife and domestic livestock.

appropriate, clarify and promote rights to access and use of the resources

Clarifying the rights to access resources is fundamental to sustainable use of resources and ensuring that benefits are shared equitably. There are many aspects relating to rights and responsibilities in South Africa that are either unfair or not clear. This can lead to over-use of some resources, lack of adequate management and controls, and may unfairly deny access to people who should benefit from certain resources. There needs to be further debate regarding rights and access to resources, especially priority biological resources. In some cases, to ensure conservation and/or sustainable use, rights of access may need to be balanced against other rights. For example, while no one can be denied their rights, the state may nevertheless put restrictions on those rights through regulations, so that one person's rights do not infringe on another person's rights, including the rights of future generations.

ACTIVITY 4.1.2

Develop and promote appropriate mechanisms for equitable and sustainable distribution of benefits derived from extractive resource use

This includes commercialisation where feasible. In order to find ways to ensure benefits are distributed more equitably, it is necessary to understand the patterns of use of biological resources, the various forms of access, different user groups and stakeholders. Various appropriate options could be applied to different situations. It is especially important to be clear about sharing of benefits from resources on state land, and access to nationally important biological resources, such as threatened and/or endemic species.

ACTIVITY 4.1.3

Create an appropriate bioprospecting framework that encourages beneficiation of our indigenous biological resources and knowledge in a way that benefits South Africans

This framework must include guiding principles and address a number of concerns, such as stakeholder participation, capacity constraints and creating awareness. The framework should build on and ensure implementation of existing legislation, through co-ordination and co-operation. Some legislation may need to be reviewed, while new legislation may be necessary to deal with aspects inadequately covered elsewhere, such as protection of traditional knowledge. The framework should also ensure management of the resource for conservation and sustainable use.

ACTIVITY 4.1.4

For priority biological resources, clarify and promote responsibilities for control and management of resources

Sustainable use of biological resources requires management and action at local level. The roles and responsibilities of custodians of biodiversity at a local level need to be clarified and responsible resource management and local governance promoted and facilitated.

OUTCOME 4.2

Partnerships between government, the private sector, organised civil society and communities encourage entrepreneurship, innovation, investment and action at local level

ACTIVITY 4.2.1

Streamline processes and procedures for small-scale public-private-community partnerships to encourage partnerships at local level, with a particular emphasis on communal and state land

Sustainable use of resources requires partnerships to be built at local level, to facilitate and enable local action. The procedures to set up partnerships and make funds available at local level need to be made quicker, cheaper and more accessible. It is recognised that communities in the general sense are not necessarily homogenous and may have many different interests. 'Community' in this context refers to any group of persons or part of such a group who share common interests and who regard themselves as a community. 'Community' thus includes various resource user groups who wish to work together and co-operate to safeguard and manage the resource.

ACTIVITY 4.2.2

Develop and grow the natural products sector in a way that encourages value-adding, sustainability, entrepreneurship and local economic development

An enabling framework to achieve this would include commercialisation strategies where sustainable exploitation is manageable and economically viable and/or where natural production can be enhanced; investment in research; development of in-country expertise and technology; and support for trade/industry associations in the natural products sector. Implementation would need to be supported and monitored. Note that 'natural products' refers to products that are either harvested in the wild or cultivated in a way that does not

destroy biodiversity in priority areas. Natural products include medicines, essential oils, perfumes, aromatics, cosmetics, food (many examples), silk, fibre, building materials, crafts, horticulture and indigenous wood products. This includes biodiversity-friendly game farming i.e. farming with indigenous species in a way that maintains genetic, species and ecosystem diversity. The same principles should apply to the fishing sector. Biodiversity provides many opportunities to stimulate local economic development, which should be managed to ensure sustainability. Projects need to be developed that link to existing initiatives, such as the local economic development programmes of local government and development agencies.

ACTIVITY 4.2.3

Provide financial, marketing and management support to biodiversity-based small businesses

Small biodiversity-based businesses at local level (such as ecotourism, plant nurseries, and animal breeding, including aquaculture and beekeeping) need support in order to become established and to thrive.

There are many examples of both successes and failures to learn from and many ways that government and the business and financial sectors can assist. This links to activities regarding trade and industry and capacity building.

The wildlife industry in South Africa, including ecotourism and hunting, already contributes significantly to economic growth, job creation and expansion of land under biodiversity management.

ACTIVITY 4.2.4

Promote sustainable use of game animals and birds as an alternative conservation compatible land use that provides economic benefits

The wildlife industry in South Africa, including ecotourism and hunting, already contributes significantly to economic growth, job creation and expansion of land under biodiversity management. More could be done to grow the sector and enhance its sustainability, for example, by expanding the scope of use of biological resources, broadening the resource base and developing, among others, management guidelines, norms and standards. This could apply to both communal and privately owned land. Partnerships could be developed between government, communities and the business sector as part of poverty alleviation and job creation strategies.

OUTCOME 4.3

The ecological and social sustainability of extractive use of biological resources is researched, assessed and monitored, and opportunities for improvement are identified and implemented

ACTIVITY 4.3.1

Identify priority resources and undertake research on sustainable use, including collating information on extractive use of indigenous biological resources and assessing this use for sustainability, contribution to livelihoods, potential for improved benefits and/or management

Indigenous biological resources are used extensively across South Africa, but knowledge regarding this use is often patchy and not widely available. In order to manage these important resources better, it is necessary to understand the extent of their use, the existing knowledge, including traditional and scientific knowledge, and how it is applied. Communities and stakeholder groups using biological resources should be encouraged and assisted to monitor the use and management of the resources themselves, building on their own knowledge. This information could also become available in spatial formats, so that it can feed into and better inform spatial conservation and development plans. A key research question is the distribution and abundance of resources: how much is available and how much can be harvested? There is a need to understand the dynamics underpinning biological resources management, determine optimal sustainable yield for each priority resource in a participatory manner with all stakeholders. Government, scientists and NGOs should work with communities to manage resources and identify ways to enhance livelihoods. This assessment should identify resources that are vulnerable to overexploitation due to high value and slow growth and resources that require cultivation. Although not the primary aim, such an assessment may assist with the implementation of Chapter 4 of NEMBA through the identification of threatened or protected species to which restrictions on activities (or use) may apply.

ACTIVITY 4.3.2

Incorporate indigenous knowledge and cultural considerations into research, management and monitoring of biological resources

South Africa has a wealth of traditional and indigenous knowledge on the use and management of biological resources, including both plants and animals. The social and cultural importance of biological resources needs to be recognised. Scientists must work with resource users to identify ways to improve livelihood strategies and management of resources. This should include research on agro-biodiversity and the production and use of indigenous crops and seed resources. Special attention should be given to indigenous farm animal genetic resources.

ACTIVITY 4.3.3

Assess the potential for appropriate sustainable resource use in protected areas and include this in park management plans

NEMPAA calls for protected area management plans to include sustainable use and sharing of benefits. In national parks, consumptive utilisation must be balanced against their role and function as control sites for benchmarking and the role they play in evolutionary processes. The appropriateness of resource use in protected areas should be guided by the role of the protected area in conserving biodiversity of national or international importance. Guidelines and standards for community agreements for protected areas need to be developed, drawing on other agency and NGO experience, for example with participatory forest management and community-based natural resource management guidelines.

ACTIVITY 4.3.4

Monitor the impact of trade in wildlife and wild plants on biodiversity

This monitoring must inform management plans, to ensure that such trade is sustainable.

The impact of trade in wildlife and wild plants on biodiversity should be monitored.

ACTIVITY 4.3.5

Implement programmes for ongoing research, assessment and monitoring to fill gaps and further inform policy, strategy and action

Ongoing monitoring of the impacts and pressures on the sustainability of use of priority resources is needed to enable users to manage the resources adaptively. Ideally, this monitoring should bridge the barriers between traditional and scientific knowledge and enable local people to monitor and manage the resources, for example through community-based biodiversity inventories (Biodiversity Registers) and community-based monitoring and reporting systems.

OUTCOME 4.4

Use of biological resources is well managed to optimise sustainable benefits

ACTIVITY 4.4.1

Prioritise management and/or recovery plans for resources that contribute significantly to livelihoods, are being severely impacted on, and/or are significant in terms of biodiversity, cultural or economic considerations

Management and/or recovery plans should be prioritised for species that are significant to people's lives and livelihoods. Such plans should include mechanisms to ensure that the capacity exists to implement projects, manage activities and monitor progress, including technology transfer. The plans should include regular monitoring and review, and follow adaptive management principles. NEMBA makes provision for the development of biodiversity management plans and species management plans for threatened species and species in need of protection.

ACTIVITY 4.4.2

Strengthen adaptive management systems for marine living resources to ensure sustainable off-take and recruitment

Fisheries off-takes must be managed to ensure sustainability. Given the high number of species (more than 340) used by

South African fisheries, more species-level interventions may be needed in the marine environment than in the terrestrial environment. Conservation of estuaries and the marine ecosystem as a whole is important for recruitment.

ACTIVITY 4.4.3

Establish *ex situ* management programmes, including nurseries, to relieve pressure on harvesting of wild medicinal plants

The harvesting of medicinal plants from the wild is widespread and supports a multi-million Rand industry. Use of wild medicinal plants is culturally and socially important, and has created tens of thousands of jobs. However, increasing pressure on wild populations needs to be managed especially for rare and threatened species.

ACTIVITY 4.4.4

Establish community-based natural resource management programmes for subsistence and artisanal use of wild resources, such as medicinal plants and fuel wood, by communities

Communities and resource user groups need to actively involved in management of resources on which they depend and are key implementing partners in achieving biodiversity management objectives. Adaptive management mechanisms should be emphasised.

ACTIVITY 4.4.5

Develop enforceable restrictions on unsustainable use and trade in species of national and international importance

Trade in threatened or protected biological resources needs particular attention. Trade in such plant and animal species should be regulated under Chapter 4 of NEMBA, for listed threatened or protected species and associated restricted activities.

The harvesting of medicinal plants from the wild is widespread and supports a multi-million Rand industry.

SO 5.

A network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape

Conservation of biodiversity at all levels is an essential component of sustainable development. A system of formal protected areas is crucial for conservation, but is unlikely on its own to conserve biodiversity effectively, especially in a country as rich in biodiversity as South Africa. Conservation should be extended to biodiversity priority areas across the landscape and seascape, and across various land use regimes. In order to be effective, areas important for biodiversity conservation need to be identified scientifically, based on both representivity and persistence criteria. Since resources are scarce, areas important for biodiversity conservation should be prioritised.

A network of protected areas, where biodiversity is maintained in a relatively undisturbed state, is the backbone of conservation efforts in South Africa.

A biodiversity priority area is a spatial area identified in a systematic biodiversity plan as required for meeting biodiversity targets. Biodiversity targets are quantitative targets for conserving a representative sample of biodiversity pattern (species and ecosystems) and key ecological processes. They are set based on best available science. Systematic biodiversity plans can be carried out at national, bioregional, provincial or local level. The national biodiversity priority areas (assessed at a scale of 1:250 000) should guide the development of finer scale plans at provincial and local level (1:50 000 or finer). The Strategic Objectives and Outcomes identified to mainstream biodiversity, conserve biodiversity and use it sustainably apply especially to biodiversity priority areas.

Mainstreaming, integrated planning, management of threats and ongoing research, monitoring, assessment and adaptive management are important components of effective conservation. Such outcomes and activities are important across the country, but are especially highlighted for spatial areas considered priorities for biodiversity conservation.

OUTCOME 5.1

Biodiversity priority areas identified in the National Spatial Biodiversity Assessment are refined in provincial, regional and local systematic biodiversity plans

ACTIVITY 5.1.1

Undertake systematic biodiversity planning in priority areas identified in the National Spatial Biodiversity Assessment and/or in regional biodiversity plans

The NSBA identifies national spatial priority areas, highlighting areas where finer scale planning is necessary, and providing the context for regional, provincial and local planning. Within the priority areas it is important to identify areas for expansion of protected areas, whether these are formal protected areas, or communal or private land under conservation management. Biodiversity plans should also identify threatened ecosystems and ecosystems in need of protection (linked to NEMBA).

ACTIVITY 5.1.2

Publish bioregional plans in terms of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004)

NEMBA allows for the publishing of bioregions, bioregional plans and biodiversity management plans. Ultimately, the aim is a coherent series of nested management plans at various levels, covering larger bioregions, threatened ecosystems, protected areas and species. There is a need to develop norms and standards and guidelines for these plans. Such plans are not limited to formal protected areas and include land outside of the protected area network.

OUTCOME 5.2

The protected area network is secured, expanded and managed to ensure that a representative sample of biodiversity and key ecological processes are conserved

A network of protected areas, where biodiversity is maintained in a relatively undisturbed state, is the backbone of conservation efforts in South Africa. There are various types of protected area in South Africa. Some protected areas are formal (i.e. proclaimed in terms of specific legislation) while others are informal. This section refers to protected areas and the protected area network in the broad sense and is not limited to the definition of protected areas in terms of NEMPAA, which includes special nature reserves, national parks, nature reserves and protected environments. NEMPAA binds national and local spheres of government, and the provincial sphere, subject to section 146 of the SA Constitution. However, apart from inclusion in a Register of Protected Areas, NEMPAA does not apply to areas administered under the National Forests Act, 1998 (Act 84 of 1998) (i.e. specially protected forest area, forest nature reserve, forest wilderness area), the Marine Living Resources Act, 1998 (Act 18 of 1998) (i.e. marine protected areas) or the World Heritage Convention Act, 1999 (Act 49 of 1999) (i.e. World Heritage Sites).

ACTIVITY 5.2.1

Expand, consolidate and/or rationalise the protected area network through a range of implementation tools, focusing on priority areas for representation and persistence of biodiversity

Systematic conservation assessments and plans (like the NSBA) help to identify areas where expansion of the protected area network is desirable. Although the establishment of protected areas in South Africa dates back more than a hundred years, this process was largely *ad hoc* in the past. As our scientific understanding of biodiversity and planning technologies have improved, so it has become possible to plan effectively for a protected area network that will ensure that a representative sample of biodiversity pattern and key ecological processes are conserved across the entire country. Where gaps are highlighted, options and tools for expansion need to be identified, including options for conservation on non-state land. Ideally this process needs to take account of both legal status and management effectiveness of existing protected areas. A range of available implementation tools should be explored to identify appropriate and feasible options for expansion, consolidation and rationalisation of the protected area network to ensure optimal conservation of biodiversity pattern and ecological processes. These include expansion and/or establishment of formal protected areas, proclaimed in terms of a number of pieces of legislation, administered by a range of government departments. Such formal protected areas include special nature reserves, national parks, nature reserves and protected environments, declared in terms of NEMPAA; specially protected forest area, forest nature reserve, forest wilderness area declared in terms of the National Forests Act, 1998 (Act 84 of1998); marine protected areas declared in terms of the Marine Living Resources Act, 1998 (Act 18 of 1998); and World Heritage Sites declared in terms of the World Heritage Convention Act, 1999 (Act 49 of 1999). Sites declared in terms of Ramsar are either included within the boundaries of other types of formal protected area, such as national parks, or provincial nature reserves, or are unprotected. NEMPAA is in the process of being implemented, and the extent to which current 'informal' protected areas, such as Natural Heritage Sites, biosphere reserves, conservancies and private nature reserves, will be included in the category 'protected environments', or in national parks, provincial or local nature reserves by contractual agreement, is still untested. NEMBA makes provision for the declaration of threatened ecosystems and ecosystems in need of protection, which may be subject to restrictions regarding identified threatening processes. Other mechanisms also exist, such as stewardship agreements and voluntary contracts, promoted through incentives and other ways, which should be explored together with landowners (private, public and communal). There may be options that have not been explored to date.

ACTIVITY 5.2.2

Build understanding among relevant protected area officials of the variety of implementation tools for expanding the protected area network, and build capacity for using these tools and for managing land consolidation for protected areas

Expansion, consolidation and rationalisation of the existing protected area network to better serve long-term conservation of biodiversity requires conservation authorities to understand the opportunities and implications of the various policy, legal and institutional options for doing so. Officials need capacity, skills, tools and resources for engaging with a wide range of individuals and decision-makers in both the public and private sectors. Skills required include project management, business development, negotiation, facilitation and conflict resolution.

ACTIVITY 5.2.3

Undertake focused engagement with land reform programmes, and explore opportunities for expanding the protected area network through land reform

Several land claims in protected areas have been settled and communities in many areas have opted to continue using the land for conservation and/or ecotourism. There is a need to distill and document lessons on how to engage with land claims in existing protected areas, and explore a range of opportunities to develop similar ventures, including outside the formal protected area network. In addition to land restitution, land redistribution is a key pillar of the land reform programme. A target for land redistribution of 30% of agricultural land by 2015 has been set by the national government, presenting both opportunities and challenges for conservation of biodiversity, sustainable use, mainstreaming biodiversity into agriculture, development of small biodiversity-based enterprises, and support and extension services. This is particularly important in biodiversity priority areas.

ACTIVITY 5.2.4

Manage protected areas effectively and efficiently, including development of protected area management plans and engaging with surrounding communities and landowners

A target for land redistribution of 30% of agricultural land by 2015 has been set by the national government.

The protected area network forms the core or backbone of conservation efforts. In many areas, protected areas also form the basis of economic activity. The role and function of protected area staff is broadening to include social and economic development. Protected areas must be managed effectively, including adaptive management; managing pressures such as land degradation and invasive alien species; developing and implementing funding strategies; developing and implementing human resources strategies; working with stakeholders; and monitoring. NEMPAA calls for the development of protected area management plans for protected areas, particularly national parks and provincial and local nature reserves. Although protected environments are not required to develop management plans in terms of legislation, such areas should ideally also develop management plans to guide conservation and development. Management plans should also be developed for protected areas declared in terms of other legislation, such as marine protected areas and forests (even though the requirement for protected area management plans in the NEMPAA does not apply to these types of protected areas). Protected areas are part of the landscape and need the support of surrounding communities. Benefits can flow both ways. It is essential that links between protected areas and surrounding communities are recognised and built into protected area management plans, so that appropriate projects to integrate surrounding communities in the management of these areas and ensure that benefits flow to them, or between parties, are implemented. This includes recognising the knowledge of local communities. Protected area management plans should be implemented, monitored and adapted as necessary. Sharing of lessons learned and guidelines for best practice are an important component of this process.

ACTIVITY 5.2.5

Develop a national funding strategy, including cross-financing mechanisms, to ensure that the protected area network is well resourced

While protected areas in many parts of the country can raise significant revenues from tourism, game sales, concessions and so on, it must be recognised that not all protected areas can be self-financing. For example, tourism numbers in some areas may need to be limited. Biodiversity is a public good and adequate funds must be made available from government, especially to secure areas of international and national significance. This may require review and rationalisation of resource allocation in relation to biodiversity values and significance of the protected area.

OUTCOME 5.3

Biodiversity is effectively managed in key ecological corridors and in high priority fragments of natural habitat across the landscape and seascape, using tools such as incentives

ACTIVITY 5.3.1

Develop, publish and implement biodiversity management plans for threatened ecosystems in terms of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004), with private and communal landowners as key roleplayers

Protected areas alone are unlikely to be sufficient to conserve biodiversity and the full participation of private and communal landowners is necessary. This may require assistance with implementation and monitoring, and incentives like tax deductions for activities undertaken in terms of a recognised management plan, support from public works programmes in environmental management and information and extension services.

ACTIVITY 5.3.2

Build the extension services in conservation agencies, in collaboration with other departments or organisations that have extension services, to engage more widely with private and communal landowners

Conservation agencies must become more proactive in biodiversity management and conservation outside of protected areas. Extension work needs to be seen as highly skilled and specialised, and career paths in extension should be developed. Extension services would be more effective and efficient if extension officers from a range of departments (e.g. conservation, agriculture, water affairs) collaborated and combined efforts.

ACTIVITY 5.3.3

Ensure that threatened ecosystems, ecological corridors and other special biodiversity features (such as wetlands, coastal dunes and ridges) are given appropriate status in Spatial Development Frameworks, and are adequately weighed in decisions about changes in land-use

Spatial Development Frameworks are an important land-use planning and decision-making tool, required by all municipalities. Threatened ecosystems, ecological corridors and other special biodiversity features should be taken into account in a meaningful way in the planning categories and land management guidelines set out in SDFs. Such areas could possibly be listed as local nature reserves or "protected environments" in terms of NEMPAA, a purpose of which is to protect the area if the area is sensitive to development, due to its biological diversity... or for aesthetic reasons.... "(Section 46 (2)(c).

ACTIVITY 5.3.4

Engage with major production sectors, such as agriculture, forestry, mining and fisheries, in order to implement biodiversity set asides, development offsets and to

Threatened ecosystems, ecological corridors and other special biodiversity features such as wetlands, coastal dunes and ridges, should be adequately weighed in decisions about changes in land use.

enhance operational standards in areas of high biodiversity importance, with emphasis on long-term persistence of threatened ecosystems and key ecological processes

The priority sectors on which to focus mainstreaming efforts may vary from priority area to priority area.

OUTCOME 5.4

Management plans for species of special concern ensure their long-term survival in the wild

ACTIVITY 5.4.1

Develop, publish and implement biodiversity management plans for species of special concern, including threatened species, endemic species and high-value useful species, with private and communal landowners as key roleplayers

NEMBA allows for the listing of threatened species and species in need of protection, and associated restricted activities. It also allows for the development of biodiversity management plans, which can apply to species and can be developed by a range of stakeholders. Implementation of management plans will require the necessary level of support (scientific research and resources) within and outside South Africa. These biodiversity management plans could be in or out of protected areas; and may extend beyond priority areas as identified by the National Spatial Biodiversity Assessment and other fine-scale priority areas. In some cases, management will involve meta-population management and *ex situ* conservation. Management plans for critically endangered species need to be prioritised.

OUTCOME 5.5

Research and monitoring programmes support the establishment and effective management of a network of conservation areas

ACTIVITY 5.5.1

Undertake applied research that addresses key management issues in protected areas

Protected areas have, by definition, biodiversity conservation as a primary management objective. Protected areas also have important social and economic objectives and if effectively managed can contribute significantly to national, provincial and local development objectives. Protected areas need to be carefully managed to achieve these multiple objectives, as a network and on an area by area basis. Management plans should be underpinned by research and ongoing monitoring.

ACTIVITY 5.5.2

Undertake research on key management questions related to biodiversity compatible land and resource use in priority areas outside the formal protected area network

An effective protected area network, while essential for biodiversity conservation, is unlikely on its own to achieve biodiversity targets. Biodiversity-compatible land and resource use and management will be needed in priority areas outside the protected area network. Yet there is often insufficient information about what constitutes biodiversity compatible land and resource use to make informed choices and decisions in this regard. Remedying this will require integration across sectors; co-operation and partnerships with a range of stakeholders, landowners and resource use groups; and research into management options, appropriate technology and monitoring and evaluation of management interventions.

ACTIVITY 5.5.3

Monitor management effectiveness in protected areas, with an emphasis on biodiversity objectives

The need for a national framework for management of protected areas, including norms and standards, was noted in Activity 2.5.6, while Activity 5.2.4 deals with the development and implementation of protected area management plans. A monitoring and evaluation programme is needed to monitor the implementation of these plans and evaluate their effectiveness, particularly with regard to achieving biodiversity objectives.

ACTIVITY 5.5.4

Monitor the effectiveness of interventions and programmes in priority areas outside formal protected areas, with an emphasis on biodiversity objectives

As with monitoring of the effectiveness of management within protected areas, it is necessary to monitor the effectiveness of interventions and management of important biodiversity areas outside the formal protected area network. This should inform further adaptive management plans and contribute towards assessment and reporting of the rate of loss of biodiversity across the landscape and seascape.

5. NATIONAL BIODIVERSITY IMPLEMENTATION PLAN

The National Biodiversity Implementation Plan sets out the strategic objectives, outcomes and activities identified during the NBSAP process as necessary for achieving the overarching goal. It identifies lead agents and key partners for implementation of the activities. More detailed planning and budgeting will be needed in order to roll out implementation. Long-term (15-year) targets are set for strategic objectives, while short-term (5-year) targets are set for outcomes. Note that the development of targets and indicators should be completed, and linked to indicators for CBD National Reports.

1.1. Goal, Strategic Objectives and 15-year Targets

National Biodiversity Implementation Plan		
Goal	***Conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future.***	
Strategic Objectives		***15-year Targets***
SO 1: Policy Framework for Biodiversity Management	An enabling policy and legislative framework integrates biodiversity management objectives into the economy.	• South Africa fully and consistently meets international obligations regarding biodiversity in the context of national priorities • Biodiversity values are fully integrated into the macro-economy, informing policy, planning, budgeting and decision-making processes at all levels and all sectors.
SO 2: Institutional Framework for Biodiversity Management	Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector.	• Biodiversity concerns occupy a significant place on the national agenda • All organs of state in all spheres of government, and all stakeholders and roleplayers, co-operate and work effectively and efficiently to achieve biodiversity management objectives
SO 3: Integrated Management of Terrestrial and Aquatic Ecosystems	Integrated terrestrial and aquatic management minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security.	• Effective control of known priority invasive species is achieved, primarily through programmes focused on poverty relief • Catchment Management Agencies are established in all biodiversity priority areas, are effectively achieving integrated resource management and are meeting biodiversity objectives • Disaster prevention and management plans (including climate change impacts) incorporate wise ecosystem management principles and practices, especially for water, fire and coastal processes • No genetically modified organisms posing a threat to biodiversity are released into the environment • All sectors that impact on biodiversity are making a significant contribution towards biodiversity management and consider biodiversity in all decisions regarding resource use
SO 4: Sustainable Use of Biological Resources	Human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of the benefits.	• Economies based on use of species and genetic resources are optimised and sustainably managed and contribute significantly to livelihoods and equity • Priority fish stocks recover to sustainable levels • No species status declines • Natural products sector contribution to GDP grows by 50% compared to 2005 baseline • Poverty is alleviated through more equitable and effective resource use

National Biodiversity Implementation Plan		
Goal	***Conserve and manage terrestrial and aquatic biodiversity to ensure sustainable and equitable benefits to the people of South Africa, now and in the future.***	
Strategic Objectives		***15-year Targets***
SO 5: Conservation Areas	A network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape.	• Comprehensive biodiversity monitoring systems inform planning • The protected area network covers 12% of the terrestrial and 20% of the marine environment thereby contributing to representation targets in priority areas • There is no further loss of endangered and critically endangered ecosystems and no attrition of ecosystem functioning in priority areas • At least two entire 'watershed to coast' protected environments are established and effectively managed

1.2. SO 1: Policy Framework for Biodiversity Management: Outcomes, 5-year Targets and Indicators

SO 1: Policy Framework for Biodiversity Management	***An enabling policy and legislative framework integrates biodiversity management objectives into the economy.***	
Outcomes	***5-year Targets***	***Indicators***
1.1 The value of biodiversity to the economy and to people's lives is quantified and monitored to inform policy, strategy and action.	Biodiversity valuation is used as a mechanism to guide national government budget allocations and spending patterns, and a system is in place to monitor its uptake into policy, strategy and action.	• Appropriate valuation studies • Percentage of national and provincial government budget allocated to biodiversity conservation • Amended budget allocations and spending
	The social and economic value of biodiversity, as reflected in appropriate macro-economic indicators, shows that South Africa's stock of natural capital is not declining.	• Macroeconomic indicators • Natural Resource Accounts • Economic value of selected ecosystem services in parts of SA (Rands) [NSoER proposed indicator] • Relative volume of virtual water that SA exports. •Geological foot print per capita.
1.2 Biodiversity considerations are integrated into macro-economic, trade, industrial and fiscal policy.	The budget allocations and spending patterns of organs of state in all spheres of government reflect the full costs and benefits of ecosystem service provision.	• Amended budget allocations and spending • Annual budgets of departments with biodiversity management.
	Opportunities for economic instruments that encourage activities enhancing biodiversity and discouraging activities that impact negatively on biodiversity have been identified, and implementation is underway.	• Economic instruments (e.g. incentives, tax rebates) and their levels of uptake
1.3 Biodiversity considerations are integrated into resource management policy and legislation.	National government's cross-cutting policy frameworks and implementation plans (including the National Strategy for Sustainable Development) reflect the objectives of the NBSAP.	• Departmental business plans • Implementation plans for adaptation measures • Environmental implementation Plans • Environmental Management Plans
	National resource management policies incorporate biodiversity considerations.	• Policy reviews • Performance indicators • Audits • Number of common indicators between biodiversity M&R system (NEMBA), SOCRS DWAF M&E system (National Water Act)

SO 1: Policy Framework for Biodiversity Management	***An enabling policy and legislative framework integrates biodiversity management objectives into the economy.***	
Outcomes	***5-year Targets***	***Indicators***
	Legislation governing national, provincial and local resource management is aligned and rationalised where necessary and appropriate regulations have been published.	• Policy and legislation reviews • Regulations
1.4 A national biodiversity planning and assessment framework informs all decisions regarding land and resource use and spatial development.	The National Spatial Biodiversity Assessment is updated with latest available data.	
	The National Spatial Development Perspective and all Provincial Growth and Development Strategies and Spatial Development Frameworks adequately reflect biodiversity priorities as set out in the NBSAP and National Spatial Biodiversity Assessment.	• NSBA reports and maps • Maps at appropriate scales with demarcated sensitive areas
	Guidelines for integrating biodiversity considerations into spatial planning and environmental management and associated support programmes enable provinces and municipalities to fulfil their biodiversity mandates.	• Guidelines and maps • Area (ha) of sensitive and threatened ecosystems per province and/or municipal area, by ecosystem type • Percentage of each of the above that is degraded or transformed, measured annually • Percentage of land with protected area status • Audits of NEMA and NEMBA compliance and alignment of IDPs with bioregional plans • SEAs of Spatial Development Frameworks • Area of natural green space (municipal parks, recreation areas or other open space) per capita within the municipal area with conservation value
	Land reform and biodiversity programmes incorporate tenure, land redistribution and biodiversity considerations in a mutually beneficial way.	• NSoER proposed indicators on land use management/degradation; land tenure and equitable access to land
	Guidelines for integrating biodiversity in environmental assessment are developed, adopted by government and implemented by environmental assessment practitioners.	• Guidelines • Strategic Environmental Assessments, Risk Assessments and Cost-benefit Analyses in use • Compliance monitoring (% Records of Decisions and Authorisations monitored) • Authorisation statistics • Audits of compliance with Environmental Management System

1.2. SO 1: Policy Framework for Biodiversity Management: Activities, Lead Agents and Support Partners

SO 1: Policy Framework for Biodiversity Management	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
1.1 The value of biodiversity to the economy and to people's lives is quantified and monitored in order to inform policy, strategy and action.					
1.1.1	Conduct a periodic country-wide total economic valuation of biodiversity, with an emphasis on goods and services, that draws linkages between biodiversity, the economy and poverty alleviation.	Urgent	DEAT, SANBI	CSIR, DST/NRF, universities	Investigate feasibility, develop ToR, outsource, monitor
1.1.2	Determine periodically, at the local and regional scale, the use values of biological resources and ecosystems to people at a household level, and identify opportunities to encourage the sustainable management of biological resources and ecosystems.	Urgent	DEAT, SANBI	StatsSA, CSIR, DST/NRF, universities, ARC, DoA, DLA, DWAF	Investigate feasibility, develop ToR, outsource, monitor
1.1.3	Package and sell the economic case for the importance of biodiversity, tailored to key decision-makers.	Urgent	DEAT	SANBI, universities, DoA, DLA, DWAF	
1.1.4	Reflect biodiversity values in national macro-economic indicators in order to monitor changes in natural capital.	High	StatsSA	DEAT, SANBI	Monitor and evaluate
1.2 Biodiversity considerations are integrated into macro-economic, trade, industrial, and fiscal policy.					
1.2.1	Engage proactively and constructively with National Treasury to ensure that biodiversity is a key consideration in policy development, budgeting, planning and auditing processes.	Urgent	DEAT	National Treasury, SANBI, DPLG	Engage National Treasury - DG cluster
1.2.2	Integrate biodiversity considerations in policy development, budgeting and planning processes in the Department of Trade and Industry.	High	DTI	DEAT, SANBI, Economic Cluster	
1.2.3	Include biodiversity accounting in corporate environmental audits.	Medium	DEAT	Government departments at all levels, the DTI, NEDLAC, SACOB, NAFCOB, StatsSA, Industrial Environmental Forum	
1.2.4	Target the banking industry and financial sector to identify incentives and opportunities to integrate biodiversity considerations into investment and lending policies.	High	NGO - WWF?	DEAT, National Treasury, the DTI	Monitoring and support

SO 1: Policy Framework for Biodiversity Management	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
1.3 Biodiversity considerations are integrated into resource management policy and legislation.					
1.3.1	Integrate biodiversity considerations in the National Strategy for Sustainable Development.	Urgent	DEAT	SANBI, NEDLAC	
1.3.2	Integrate biodiversity considerations in the National Climate Change Response Strategy and Action Plan and the National Action Programme to Combat Land Degradation.	Medium	DEAT	SANBI, DWAF, DoA, DLA, DME, Universities, NGOs	Oversight and incorporation of results into national positions for the UNFCCC, CBD and CCD
1.3.3	Engage proactively and constructively with state departments and agencies to ensure that biodiversity is a key consideration in the policy development, budgeting and planning processes.	High	DEAT	Other Government Departments, National Treasury	NSSD; incorporate into budgets, policies, strategies, actions and auditing tools; encourage same in other government departments.
1.3.4	Integrate biodiversity considerations in policy development, budgeting and planning processes in the Department of Water Affairs and Forestry.	Urgent	DWAF	DEAT, SANBI	
1.3.5	Integrate biodiversity considerations in policy development, budgeting and planning processes in the Department of Agriculture.	Urgent	DoA	DEAT, SANBI	
1.3.6	Integrate biodiversity considerations in policy development, budgeting and planning processes in the Department of Minerals and Energy	High	DME	DEAT, SANBI	
1.3.7	Integrate biodiversity considerations into tourism growth strategies, guidelines and codes of conduct.	Urgent	DEAT	Provincial government, tourism industry, Tourism Business Council, THETA, NGOs (e.g. Fair Trade in Tourism), PHASA	
1.3.8	Include biodiversity considerations in fishing regulations and guidelines, in order to mitigate negative impacts on biodiversity and encourage sustainable practices.	Urgent	DEAT - MCM	Provincial government, fishing industry, the DTI, NGOs, International maritime association, organised fishery structures, coastal communities	

SO 1: Policy Framework for Biodiversity Management	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
1.3.9	Align and rationalise legislation on land-use planning and management and catchment management.	Urgent	DLA	DEAT, SANBI, DoA, DWAF	
1.3.10	Develop a national policy framework to guide the implementation of biodiversity offsets (off-site mitigation) in threatened ecosystems, ecological corridors and other special habitats.	High	DEAT	National Treasury, SANBI, provinces	
1.3.11	Align, rationalise and/or develop (as appropriate) legislation on incentives and support for appropriate land management in biodiversity priority areas.	High	DoA	DEAT, DWAF, provinces, National Treasury, DLA, landowners, conservancy associations	
1.3.12	Rationalise legislation on invasive alien species.	High	DEAT	DoA	
1.3.13	Rationalise legislation on genetically modified organisms.	High	DoA	DEAT, DTI, Department of Health	
1.3.14	Finalise policy and regulations on translocation of wildlife, including extra-limital game and aquatic species.	High	DEAT	Provinces, DoA	
1.4 A national biodiversity planning and assessment framework informs all decisions regarding land and resource use and spatial development.					
1.4.1	Set quantitative national targets for all ecosystems and for threatened, endemic, indicator, flagship and high-value useful species.	Urgent	SANBI co-ordination and Centres of Excellence	Scientific community (conservation agencies, tertiary institutions, research institutions, museums), DEAT	
1.4.2	Update the National Spatial Biodiversity Assessment at least every five years, to assess the status of terrestrial, freshwater, estuarine and marine ecosystems, to identify ecosystems where no further loss or degradation of natural habitat should occur, and to identify gaps in the protected area network.	High	SANBI co-ordination	Conservation agencies, NGOs, scientific community, DWAF, MCM, DEAT	
1.4.3	Ensure that the National Spatial Development Perspective takes the National Spatial Biodiversity Assessment into account.	Urgent	DLA	SANBI, DEAT, DPLG	Engage with DLA and DPLG
1.4.4	Integrate biodiversity considerations in policy development, budgeting and planning processes in the Department of Provincial and Local Government.	Urgent	DPLG	SALGA, DEAT, SANBI	

SO 2: Institutional Framework for Biodiversity Management	Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector.	
Outcomes	**5-year Targets**	**Indicators**
2.1 The biodiversity sector is transformed and representative of South African society.	Public sector transformation has achieved transformation targets.	• Public sector transformation targets • Customer/stakeholder satisfaction/perception index • Employee satisfaction index
2.2 Co-operative governance at all levels results in improved biodiversity management.	Biodiversity sector co-ordination arrangements are effective.	• Detailed memoranda of understanding agreed for natural resource permitting and management procedures; including research and information management
	The national environmental reporting framework is an effective tool for monitoring the integration of biodiversity into all national departments' policies, plans and programmes.	• Environmental Management Plans and Environmental Implementation Plans • State of Environment Reports
	A Biodiversity Charter addressing access, ownership and benefit inequity in the biodiversity sector is developed and performance in addressing equity targets in the private sector is tracked using a black economic empowerment scorecard.	• Biodiversity Charter/BEE scorecard developed to include considerations of benefit-sharing
2.3 Institutions with biodiversity-related responsibilities and programmes are effective, efficient and adequately capacitated.	Agencies with statutory responsibilities for biodiversity management and biodiversity research have adequate capacity to perform mandatory functions.	• Percentage of staff positions filled in agencies with statutory responsibilities for biodiversity
	Municipal mandates for biodiversity are clarified, supported, funded and implemented.	• Municipal performance indicators
	Stakeholders participate in implementation and monitoring of the National Biodiversity Framework.	• Stakeholder participation plans and databases.
	DEAT makes tender information on biodiversity projects freely available.	
	The Environmental Management Inspectors are ensuring compliance with biodiversity regulations.	
	Dispute resolution mechanisms manage conflicts regarding access, use and management of biodiversity.	
2.4 Financial resources for biodiversity management are adequate, and effectively and efficiently used	Mandatory functions of agencies with statutory responsibilities for biodiversity conservation are adequately funded.	• Business plans • Audit reports • Performance indicators
2.5 Information management systems, research priorities, and monitoring and evaluation frameworks are in place and effectively supporting biodiversity management	Biodiversity monitoring informs biodiversity management plans, identification of threatened species and ecosystems, listing of invasive alien species, and identification of activities requiring environmental authorisations. SANBI's Integrated Biodiversity Information System (SIBIS) and all relevant departments/institutions participate in the supply, use and sharing of information.	• Annual reviews • Biodiversity monitoring reports • Area (ha and %) of sensitive and threatened ecosystems per administrative area • Threatened and extinct species per taxonomic group per administrative area (province) • Population trends of selected species of special concern

SO 2: Institutional Framework for Biodiversity Management	Enhanced institutional effectiveness and efficiency ensures good governance in the biodiversity sector.	
Outcomes	**5-year Targets**	**Indicators**
	National biodiversity research strategy developed, and used to guide allocation of research funding.	• National biodiversity research strategy • Research funding allocations
	National system for monitoring protected area management effectiveness (with emphasis on biodiversity objectives) has been developed.	• National protected area monitoring system • Protected area business plans and annual reviews
2.6 A comprehensive and proactive national communication, awareness raising and advocacy strategy reaches targeted sectors and facilitates conservation and wise use of biodiversity.	Biodiversity components are promoted in school environmental education programmes through materials development and teacher education.	• Materials • Number of educators who have attended teacher education programmes
	A focused strategy is under implementation to create understanding of the value of biodiversity in key sectors, including local government, agriculture, forestry and mining.	• Customer/stakeholder satisfaction index • Develop baseline on stakeholder perceptions and surveys to monitor changes • Stakeholder meetings, roadshows • Media monitoring • Audit of 'hits' on web-sites
2.7 Proactive engagement and co-operation with the international community enhances conservation and sustainable use of shared resources and globally important biodiversity in South Africa.	South Africa actively co-ordinates biodiversity policy positions in multilateral environment agreements and the WTO with groups of like-minded nations.	• Biodiversity priorities and South African and African priorities reflected in decisions and resolutions of negotiations
	South Africa meets obligations for regional co-operation on biodiversity management within SADC and the African Union.	• Networks for biodiversity management activities established or strengthened at regional or international levels
	South Africa meets obligations for biodiversity management in the marine environment and Antarctica.	

5.5. SO 2: Institutional Framework for Biodiversity Management: Activities, Lead Agents and Support Partners

SO 2: Institutional Framework for Biodiversity Management	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
2.1 The biodiversity sector is transformed and representative of South African society.					
2.1.1	Implement programmes to promote and retain racial and gender representation at all levels in the sector.	Urgent	All departments		DEAT to manage the empowerment scorecard
2.1.2	Promote integration of different cultural perspectives in the organisational culture and image of the biodiversity sector.	Urgent	All departments		DEAT to produce guidelines and manage reporting processes
2.2 Co-operative governance at all levels results in improved biodiversity management.					
2.2.1	Clarify the biodiversity related mandates of different organs of state within the provisions of new legislation.	Urgent	DEAT	DPLG	DEAT to clarify responsibilities as per provisions of NEMBA and ensure the Inter-governmental Relations Act includes effective mechanisms for biodiversity co-operation.

SO 2: Institutional Framework for Biodiversity Management	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
2.2.2	Ensure that Environmental Implementation Plans (EIPs), Environmental Management Plans (EMPs) and State of Environment Reports at national, provincial and local level incorporate and reflect biodiversity objectives.	Urgent	DEAT	CEC, all departments. [Schedule 1 Depts (EIPs): DEAT, DLA, DoA, Department of Housing, the DTI, DWAF, Department of Transport, Department of Defence. Schedule 2 Depts (EMPs): DEAT, DWAF, DME, DLA, Department of Health, Department of Labour]	DEAT to incorporate reporting framework
2.2.3	Investigate and implement options for effective co-operation between national, provincial and local spheres of government and between the sectoral departments at provincial and local level.	Urgent	DPLG	Provincial and local government, SALGA	DEAT to work with DPLG to ensure implementation
2.2.4	Develop and implement mechanisms for collaboration and partnerships to effectively manage ecosystems and species that cross administrative boundaries.	Urgent	DEAT	Provincial and Local Government	
2.2.5	Improve the mechanisms for co-operation and partnerships between government, business and civil society, for example by developing a Biodiversity Charter in consultation with all stakeholders.	Medium	SANBI	DEAT, the DTI	DEAT to delegate to SANBI responsibilities for establishing sector liaison committees as part of Bioregional Programmes
2.2.6	Strengthen the co-ordinating role of South African National Biodiversity Institute (SANBI), particularly in biodiversity information collation and management, biodiversity research, biodiversity planning, and bioregional programmes.	Urgent	SANBI	Treasury, DST	DEAT to clarify mandates and assure budgetary provision for SANBI operations
2.2.7	Document and disseminate lessons learned for co-operative governance, building on replicable successes of existing biodiversity programmes where appropriate.	Urgent	SANBI	DEAT, all biodiversity related institutions	DEAT to monitor progress in establishing a knowledge management system
2.3 Institutions with biodiversity-related responsibilities and programmes are effective, efficient and adequately capacitated.					
2.3.1	Perform self-assessment of capacity to implement the National Biodiversity Framework in relation to the geographic and thematic priorities in the Framework, and refocus activities, reallocate resources and develop capacity according to the priorities in the Framework.	Urgent	DEAT	All departments	DEAT to co-ordinate national capacity self assessment

SO 2: Institutional Framework for Biodiversity Management	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
2.3.2	Provide technical support to municipalities to integrate biodiversity into planning and environmental management.	Urgent	Provinces	DEAT, SANBI, DPLG, DWAF	DEAT and SANBI to prepare guidelines for technical support and monitor implementation
2.3.3	Strengthen the capacity of existing and emerging NGOs and community-based organisations in the biodiversity sector, with an emphasis on representivity.	High	NGO Community	CBOs	DEAT to define roles and responsibilities of NGOs and CBOs in service delivery
2.3.4	Maximise opportunities for civil society and community involvement in implementation and monitoring of the National Biodiversity Framework.	Urgent	DEAT, SANBI	All departments and NGO community, CBOs	SANBI to ensure stakeholder participation plans are developed and implemented as part of Bioregional Programmes
2.3.5	Assess the impact of HIV/AIDS on institutional capacity in the biodiversity sector and implement an appropriate strategy to address this.	Urgent	All departments	Department of Labour, D. Health	
2.3.6	Implement an ongoing programme to strengthen enforcement, including voluntary and mandatory compliance mechanisms.	Urgent	All departments with regulatory functions		DEAT to co-ordinate implementation with regulatory authorities
2.3.7	Integrate enforcement functions relating to biodiversity management into the mandates of the Environmental Management Inspectors.	Urgent	DEAT		DEAT to ensure functional integration, SAPS
2.3.8	Ensure that the mechanisms for fair decision-making and conflict management provided for in the National Environmental Management Act, 1998 (Act 107 of 1998) (NEMA) are able to address disputes regarding conservation and use of biodiversity.	Medium	DEAT		

SO 2: Institutional Framework for Biodiversity Management	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
2.3.9	Develop appropriate record keeping, monitoring and auditing procedures to enable assessment and review of the effectiveness of legislation and associated regulations.		Urgent	DEAT and Provinces	DEAT to strengthen database and reporting capacities
2.4 Financial resources for biodiversity management are adequate, and effectively and efficiently used.					
2.4.1	Determine the costs of implementation of the National Biodiversity Framework, for national, provincial and local spheres of government, and develop an affordable, prioritised and phased approach to implementation.	Urgent	All departments	National Treasury, DPLG	
2.4.2	Provide financial support/mechanisms to municipalities to encourage conservation of biodiversity, with a particular focus on priority areas.	Urgent	DEAT/ National Treasury	Provinces, DPLG, SALGA	DEAT to apply performance based allocation system for priority areas
2.4.3	Allocate and use national and provincial public sector budgets more effectively to ensure and reward good biodiversity management practices.	Urgent	National Treasury and all Departments		DEAT to prepare performance based assessment system
2.4.4	Increase the pool of non-state resources available for conserving and managing biodiversity.	Urgent	National Treasury	ALL roleplayers	DEAT to liaise with National Treasury to ensure the establishment of non traditional funding mechanisms
2.5 Information management systems, research priorities, and monitoring and evaluation frameworks are in place and effectively supporting biodiversity management.					
2.5.1	Identify major gaps in knowledge and understanding of biodiversity through a collaborative process, design collaborative programmes that fill these gaps, and ensure that biodiversity inventories and atlases meet the requirements of bioregional planning and monitoring.	Medium	SANBI - co-ordination role	Scientific and relevant management community (conservation agencies, tertiary institutions, research institutions, museums)	
2.5.2	Update South African Red Data Lists and implement a co-ordinated long-term programme to update these data regularly.	High	SANBI co-ordination role	Relevant experts: SANBI (plants), EWT (mammals), Percy FitzPatrick Institute, Avian Demography Unit, UCT (birds, reptiles, frogs), SAIAB (aquatic)	

SO 2: Institutional Framework for Biodiversity Management	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
2.5.3	Establish and maintain accessible data and information systems to inform policy, strategy, action and reporting.	Urgent	SANBI	Scientific and relevant management community (conservation agencies, tertiary institutions, research institutions, museums)	
2.5.4	Establish a monitoring and evaluation framework (including indicators and thresholds) for ecosystems and species, with a particular emphasis on threatened ecosystems and species.	High	SANBI	SAEON and lots of support institutions (scientific community, conservation agencies etc.)	List threatened species and ecosystems and update these lists
2.5.5	Establish a monitoring and evaluation framework (including indicators and thresholds) for invasive and alien species, GMOs, loss and degradation of natural habitat, climate change and other threatening processes on biodiversity.	High	SANBI	SAEON and lots of support institutions (scientific community, conservation agencies etc.)	List invasive and alien species and update these lists
2.5.6	Develop national norms and standards for monitoring management effectiveness in protected areas, with an emphasis on biodiversity objectives.	Medium	DEAT	SANBI, conservation agencies	
2.5.7	Develop and implement effective mechanisms for review and revision of research and monitoring programmes.	Urgent	SANBI	All institutions dealing with biodiversity research, DST, universities, museums	
2.6 A comprehensive and proactive national communication, awareness raising and advocacy strategy reaches targeted sectors and facilitates conservation and wise use of biodiversity.					
2.6.1	Develop and implement a co-ordinated and comprehensive communication, awareness and advocacy campaign to reach key decision-makers in parliament	Urgent	DEAT, SANBI, SANParks, Provinces and Local Government	NGOs, Universities, DoE, DoA, DWAF	DEAT to co-ordinate in conjunction with Portfolio Committee

SO 2: Institutional Framework for Biodiversity Management	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
2.6.2	Design and implement a creative and innovative advocacy and communication strategy to make biodiversity concerns relevant to communities throughout South Africa.	Urgent	DEAT, SANBI, SANParks, Provinces and Local Government	NGOs, Universities, DoE, DoA, DWAF	DEAT to co-ordinate national awareness campaign
2.6.3	Design and implement focused awareness campaigns on threatening processes, including invasive alien species, GMOs and climate change that aim to change behaviour in the public and private sectors.	Urgent	DEAT, DoA, DWAF, SANBI	Provinces, SANParks, NGOs	
2.6.4	Design and implement biodiversity education programmes.	Urgent	SANBI	SANParks, Environmental Education Centres, NGOs, DEAT, DoE, Provinces	
2.7 Proactive engagement and co-operation with the international community enhances conservation and sustainable use of shared resources and globally important biodiversity in South Africa.					
2.7.1	Align policies, strategies and programmes of South Africa, the Southern African Development Community (SADC) and African Union, including the New Partnership for Africa's Development (NEPAD), where possible and strategic.	Urgent	DEAT	DFA, SADC, NEPAD, DoA, DWAF, SANParks	
2.7.2	Develop partnerships and co-operative arrangements with neighbouring countries regarding shared resources.	Urgent	DEAT	DFA, SADC, NEPAD, DoA, DWAF, SANParks	
2.7.3	Establish coalitions with groups of like minded countries to ensure that South Africa's biodiversity management objectives are not prejudiced by international trade agreements.	Urgent	DEAT	DFA, other countries	
2.7.4	Strengthen capacity for international negotiation by developing common positions with other countries where possible and strategic.	Urgent	DEAT	DFA, Other countries	
2.7.5	Implement a co-ordinated programme to build capacity across all relevant departments and institutions to engage with processes relating to multilateral agreements.	Urgent	DEAT	Relevant departments and institutions	

SO 2: Institutional Framework for Biodiversity Management	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
2.7.6	Develop, implement and strengthen programmes for international scientific collaboration, sharing of information and technology transfer.	Urgent	SANBI	DST, CSIR, DFA, ARC, NRF, other research Institutions	
2.7.7	Play a proactive role in conservation and sustainable use of Antarctic species, ecosystems and resources.	Urgent	DEAT, MCM	DFA, scientific institutions	

5.6. SO 3: Integrated Management of Terrestrial and Aquatic Ecosystems: Outcomes, 5-year Targets and Indicators

SO 3: Integrated Management of Terrestrial and Aquatic Ecosystems	Integrated terrestrial and aquatic management minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security.	
Outcomes	**5-year Targets**	**Indicators**
3.1 National initiatives to manage terrestrial and aquatic ecosystems are co-ordinated, developed and implemented with full stakeholder participation to contribute to sustainable socio-economic development.	Capacity of ecosystems to deliver goods and services is maintained [CBD TARGET 8.1].	• Listed threatened or protected ecosystems • Protected environments • Bioregional plans • Biodiversity management plans
	Five priority Catchment Management Agencies are operational, and have integrated quantitative biodiversity targets into their Catchment Management Strategies, and this is reflected in the Water Resource Strategy.	• Fitness for use; ecosystem integrity; water resource management [NSoER proposed indicators for inland water theme]
	The National LandCare Programme and the Comprehensive Agricultural Support Programme incorporate biodiversity targets, water allocation limitations and recommendations from the National Action Plan to Combat Desertification.	• Loss and degradation of productive land; access to resources [NSoER proposed indicators for human vulnerability and land themes]
	The Ecological Reserve has been determined and implemented for priority river systems and estuaries.	• Habitat integrity index [NSoER proposed indicator] • Health index of estuaries • Reserve determination reports and implementation plans
	Production activities in the coastal zone, especially housing, industry, transport, mining and agriculture, include biodiversity considerations in development plans and implement integrated environmental management (or integrated land, water and waste management) plans.	• Coastal development/habitat integrity index; coastal and estuarine pollution; resource quality [NSoER proposed indicator: Coastal and marine environments theme]

SO 3: Integrated Management of Terrestrial and Aquatic Ecosystems	**Integrated terrestrial and aquatic management minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security.**	
Outcomes	**5-year Targets**	**Indicators**
	Advance implementation of the Global Plan of Action for the Protection of the Marine Environment from Land-based Activities with particular emphasis on in the period 2002 - 2006 on municipal waste water, physical alteration and destruction of habitats and nutrients [JPOI TARGET 4.32].	• Pollutant loading entering the seas from land-based sources [NSoER proposed indicator] • Integrated Development Plans of coastal municipalities
3.2 Key production sectors and industries integrate biodiversity into their production and service standards	Dialogue has been initiated and relationships established with at least five key industries, and biodiversity has been incorporated in their production and service standards.	• Memoranda of Understanding
	The forestry and tourism industries and selected agricultural sectors have integrated biodiversity considerations into their production and service standards.	• Standards contain biodiversity considerations • Management plans
	The forestry and mining industries and selected agricultural sectors actively avoid threatened ecosystems in their production planning and implementation, and invest in managing threatened ecosystems under their control.	• Environmental Management Plans
	Production lands in identified biodiversity priority areas managed consistent with the conservation of biodiversity [TARGET 6 of the Global Strategy for Plant Conservation; and TARGET 4.1 of the CBD].	• Percentage of production lands managed consistent with the conservation of biodiversity
	Rate of loss and degradation of natural habitats decreased [CBD TARGET 5.1].	• Extent of habitat loss per vegetation type (or biome) per unit time [NSoER proposed indicator] • Index of fragmentation per unit area for priority vegetation types [NSoER proposed indicator] • Areas of rapid land cover change (area or % of biome per province) [NSoER proposed indicator]
3.3 A multi-agency national programme deals with the full suite of impacts posed by invasive species across the landscape and seascape.	A co-ordinated national programme has been established for import control of the full suite of potentially invasive species.	• National invasive species programme
	Institutional capacity and structures are in place to audit, monitor and enforce invasive species legislation.	

SO 3: Integrated Management of Terrestrial and Aquatic Ecosystems	**Integrated terrestrial and aquatic management minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security.**	
Outcomes	**5-year Targets**	**Indicators**
	Control, monitoring and eradication plans in place for priority alien species that threaten ecosystems, habitats or species [CBD TARGET 6.2].	• Invasive species status reports • Invasive species monitoring, control and eradication plans • Number of invasive alien species per ecosystem or biome; area invaded per ecosystem or biome [NSoER proposed indicators] • Area (ha and %) of municipal land invaded by invasive alien species • Area (ha and %) of municipal land cleared of invasive alien species
	Pathways for major potential invasive species controlled [CBD TARGET 6.1].	• As above
3.4 An integrated national programme facilitates adaptation to the predicted impacts of climate change on biodiversity across the landscape and seascape.	The National Climate Change Response Strategy and Action Plan is incorporated into national, provincial and local land and resource use plans, policies, programmes and decision-making processes, and into protected area design.	• Environmental Management Plans • Environmental Implementation Plans • Integrated Development Plans
	Maintain and enhance resilience of the components of biodiversity to climate change [CBD TARGET 7.1].	• Ecosystem and species status reports
3.5 Effective management and control measures minimise the potential risks to biodiversity posed by Genetically Modified Organisms.	Institutional arrangements for monitoring and inspection of GMOs have been rationalised and strengthened.	• MoUs / Service Level Agreements
	Capacity for monitoring and reporting on GMOS has been created and is fully operational.	• Biosafety Clearing House
	Capacity for biosafety research is created.	• Numbers of people involved in biosafety research • Amount of funding allocated to biosafety research
3.6 Effective waste management and pollution control measures limit the impacts of pollution on biodiversity.	An early warning system and rapid response mechanism is in place to mitigate the impacts of pollution and waste disposal on biodiversity. The resource directed water quality management policy informs integrated decision making to reduce pollution and minimise the impacts of pollution on biodiversity [see CBD TARGET 7.2].	• Percentage reduction in hazardous pollutants and solid waste reaching sensitive environments • Environmental Management Plans that include waste management plans
3.7 Research and monitoring programmes support integrated management of terrestrial and aquatic ecosystems.	Phase 1 of the National Monitoring and Evaluation Framework for integrated management of terrestrial and aquatic ecosystems has been implemented.	• National Monitoring and Evaluation Framework reports

5.7. SO 3: Integrated Management of Terrestrial and Aquatic Ecosystems: Activities, Lead Agents and Support Partners

SO 3: Integrated Management of Terrestrial and Aquatic Ecosystems	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
3.1 National initiatives to manage terrestrial and aquatic ecosystems are co-ordinated, developed and implemented with full stakeholder participation to contribute to sustainable socio-economic development.					
3.1.1	Integrate biodiversity management objectives into national and provincial programmes to combat land degradation.	High	SANBI	DEAT, DWAF, DoA, DLA, LandCare Area-wide Forums, WfW, WfWet, Working on Fire, DME, Universities, NGOs	
3.1.2	Ensure that Catchment Management Agencies integrate terrestrial and aquatic biodiversity management in their operations.	Urgent	DWAF	Catchment Management Agencies, DEAT, SANBI, DoA, DLA, DME, Universities, NGOs, SALGA, DPLG, Town & Regional Planning, DoH, WRC, SAEON	
3.1.3	Determine, implement and monitor the ecological reserve for all priority rivers and estuaries.	Urgent	DWAF	CSIR, WRC, Universities, provincial conservation agencies, regional branches of DWAF	
3.1.4	Integrate biodiversity objectives into the national river classification system by linking the biodiversity status of rivers to guidelines for water management and to land practices and environmental management in the quaternary catchment.	Urgent	DWAF	SANBI, DoA, provinces	
3.1.5	Implement integrated coastal management programmes that address biodiversity management objectives in production activities in the coastal zone.	Urgent	DEAT (MCM)	Provinces, municipalities in the coastal zone	
3.1.6	Develop and implement integrated programmes to minimise impacts on marine biodiversity.	High	DEAT (MCM)	Fisheries, fishing industry, shipping, coastal provinces, Department of Transport	

SO 3: Integrated Management of Terrestrial and Aquatic Ecosystems	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
3.2 Key production sectors and industries integrate biodiversity into their production and service standards.					
3.2.1	Include biodiversity considerations in guidelines and best practice codes of key agricultural industries, to mitigate negative impacts of agricultural production on biodiversity and encourage sustainable agricultural practices.	Urgent	DoA	DEAT, SANBI, Agricultural Unions, provincial government, non governmental organisations	CEC process, DG cluster
3.2.2	Include biodiversity considerations in forestry industry guidelines and best practice codes to mitigate negative impacts of commercial forests and harvesting of natural forests on biodiversity and encourage sustainable forestry practices.	Urgent	DWAF	DEAT, provincial government, forestry industry, LGA, non governmental organisations	CEC process, DG cluster
3.2.3	Include biodiversity considerations in mining guidelines and best practice codes to mitigate negative impacts on biodiversity and encourage sustainable mining practices.	Urgent	DME	DEAT, SANBI, Botanical Society, Chamber of Mines, IUCN Mining and Biodiversity Dialogue, Rio Tinto-BirdLife partnership	CEC process, DG cluster
3.2.4	Include biodiversity considerations in fishing industry guidelines and best practice codes, to mitigate negative impacts of fishing on biodiversity and encourage sustainable fishing practices.	High	DEAT (MCM)	Fishing industry, recreational fishermen, provinces, Department of Transport	
3.2.5	Include biodiversity considerations in property development and real estate guidelines and best practice codes.	Urgent	DLA	Estate agents and associations, DoH, provincial planners	
3.3 A multi-agency national programme deals with the full suite of impacts posed by invasive species across the landscape and seascape					
3.3.1	Ensure institutional co-operation and co-ordination at the operational level to deal with the full suite of impacts posed by invasive species.	Urgent	DEAT	DWAF, SANBI, SALGA, DoA, DLA, DoH, DTI, DoT, DPLG, Home Affairs, SARS, (link with and support programmes such as WfW, GISP and GLOBALLAST)	

SO 3: Integrated Management of Terrestrial and Aquatic Ecosystems	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
3.3.2	Prevent the entry and spread of new invasive species into South Africa.	High	DEAT	DWAF, SANBI, SALGA, DoA, DLA, DoH, DTI, DoT, DPLG, Home Affairs, SARS, SADC, Basin Management Authorities, TFCAs, (link with and support programmes such as WfW, GISP and GLOBALLAST)	
3.3.3	Control and eradicate invasive species listed in terms of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004), with an emphasis on urgent action in biodiversity priority areas.	Medium	DEAT	WfW, SANBI, DWAF, SANPARKS, DoA, GISP, provinces, all other government departments	
3.3.4	Create economic opportunities linked to the control and management of invasive species.	Medium	DWAF (WfW)	WfW, DoA, National Treasury, DEAT, DST	
3.4 An integrated national programme facilitates adaptation to the predicted impacts of climate change on biodiversity across the landscape and seascape.					
3.4.1	Implement an integrated programme for climate change adaptation, with an emphasis on vulnerable ecosystems and sustainable livelihoods.	Urgent	DEAT / SANBI	DWAF, DoA, DLA, DME, Universities, NGOs, SALGA, DPLG, Town & Regional Planning, DoH, WRC, SAEON	
3.4.2	Ensure that the protected area network is designed to allow for long-term species and ecosystem responses to climate change.	Medium	DEAT / SANBI	SANParks, provincial conservation agencies, Development Bank of Southern Africa	

SO 3: Integrated Management of Terrestrial and Aquatic Ecosystems	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
3.5 Effective management and control measures minimise the potential risks to biodiversity posed by Genetically Modified Organisms.					
3.5.1	Ensure institutional co-operation and co-ordination to deal with the potential risks posed by Genetically Modified Organisms.	Medium	DEAT	DoA, dti, DST, DoH, NGOs	
3.5.2	Develop and implement effective measures for management and control of potentially risky activities relating to Genetically Modified Organisms.	Urgent	DEAT	DoA, DST, DoH, NGOs, Private Sector	
3.5.3	Share information and provide support to ensure adoption and implementation of highest biosafety standards to minimise risks associated with Genetically Modified Organisms.	Medium	DEAT	DoA, dti, DST, DoH, NGOs, Private Sector	
3.6 Effective waste management and pollution control measures limit the impacts of pollution on biodiversity.					
3.6.1	Implement effective waste management and pollution control measures, with particular emphasis on aquatic ecosystems in biodiversity priority areas.	Urgent	DEAT & DWAF	Government at all levels, industries, mines, water utilities, municipalities	
3.7 Research and monitoring programmes support integrated management of terrestrial and aquatic ecosystems.					
3.7.1	Carry out research on the impact of all current and future threatening processes on biodiversity, and mechanisms for adaptation, management and mitigation of threatening processes, including alien invasive species, climate change, Genetically Modified Organisms, and production activities.	Medium	SANBI co-ordination role on developing national research strategy	DST, research institutions, research funders e.g. NRF, NGOs, DEAT, Provinces, SANParks, MCM	
3.7.2	Monitor and evaluate the impact on biodiversity of integrated management of terrestrial and aquatic ecosystems, to support adaptive management.	Medium	SANBI co-ordination role on developing national research strategy	DEAT, Provinces, DWAF, DoA, DLA, landowners	

SO 4: Sustainable Use of Biological Resources:

SO 4: Sustainable Use of Biological Resources	Human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of the benefits.	
Outcomes	**5-year Targets**	**Indicators**
4.1 An equitable access, rights and responsibilities regime promotes sustainable use of biological resources.	Bioprospecting framework and regulations are developed and implemented.	• Benefit sharing agreements • Material transfer agreements • Permits • Regulations • R values • Bioprospecting Fund annual reports
	Implementation of land reform programmes takes access to biological resources into account.	• MoUs
	Equitable distribution of usufruct rights to previously disadvantaged groups for living marine resources.	• Percentage increase in allocation of fishing rights and other concessions to previously disadvantaged groups
	Programme to raise awareness about opportunities for access to and benefit sharing from biological resources developed and piloted among rural communities in priority areas.	• Public awareness programme • Customer/stakeholder satisfaction/perception index
	Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife, and other valuable species is conserved, and associated indigenous and local knowledge is maintained [CBD TARGET 3.1].	• Number of genomes stored in DNA Banks • Number of accessions in gene banks • Percentage of the genetic diversity of priority species conserved
	The rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their right to benefit-sharing, are protected [CBD TARGET 9.2].	• Bioprospecting regulations
	All transfers of genetic resources are in line with the CBD and the International Treaty on Plant Genetic Resources for Food and Agriculture [CBD TARGET 10.1].	• Material transfer agreements
	Benefits arising from the commercial and other utilisation of genetic resources are shared with the countries providing such resources [CBD TARGET 10.2].	• Benefit sharing agreements
4.2 Partnerships between government, the private sector, organised civil society and communities encourage entrepreneurship, innovation, investment and action at local level.	A clear and efficient process and procedures for public/private partnerships is developed, with a specific focus on communities.	• PPP guidelines
	Investment in natural product-based small businesses at local level shows demonstrable increase in benefits from the sustainable use of biological resources (e.g. 5% per year at the level of livelihoods, jobs created, enterprises established and in natural product sector as a whole).	• BEE scorecard • Number of jobs created in biodiversity-based sectors • Economic contribution of commercially utilised indigenous species (terrestrial; freshwater; marine, coastal and estuarine species)

SO 4: Sustainable Use of Biological Resources	Human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of the benefits.	
Outcomes	**5-year Targets**	**Indicators**
	Government programmes promote investment in resource use and management at local level and involve civil society.	• Investment values
4.3 The ecological and social sustainability of extractive use of biological resources is researched, assessed and monitored, and opportunities for improvement are identified and implemented.	A list of priority biological resources based on social, economic and ecological criteria, as well as indigenous knowledge, guides research, monitoring, management and recovery plans.	• Criteria • Guidelines • Planning instruments
	Research, monitoring and evaluation programmes are in place to assess the ecological and social sustainability of extractive use of key indigenous biological resources.	• Biodiversity management plans
4.4 Use of biological resources is well managed to optimise sustainable benefits.	Collaborative management plans for recovery of priority resources developed with key stakeholders and resource user groups, and implementation underway.	• Population trends of selected species • Biodiversity management plans
	Harvesting quotas and NEMBA lists of threatened and protected species are updated based on research and monitoring outcomes.	• Conservation status of species • Lists and regulations
	Recovery plans for key fish species are implemented. [JPOI TARGET 4.30 (a): Oceans and Fisheries: Maintain or restore stocks to levels that can produce maximum sustainable yield - for depleted stocks urgently, and where possible not later than 2015.]	• Population trends of selected species
	Management programmes for medicinal plants developed with key stakeholders and implementation underway; wild populations of medicinal plants show signs of recovery.	• Tonnage of top five species traded per year [NSoER proposed indicator] • Estimates of growth rate per year • Economic value of trade in species
	Community Based Natural Resource Management programmes developed and implemented.	
	Trade in threatened species and endemic species is sustainable.	• Estimates of growth rate per year • Economic value of trade in species
	No species of wild flora or fauna endangered by international trade [CBD TARGET 4.3].	• Percentage increase in provincial agency compliance with CITES regulations • CITES Management Authority reports
	Biodiversity-based products are derived from sources that are sustainably managed [CBD TARGET 4.1].	• Percentage of biodiversity-based products derived from sources that are sustainably managed • Certification
	Unsustainable consumption of biological resources, or that impacts on biodiversity, reduced [CBD TARGET 4.2].	• Species management plans

SO 4: Sustainable Use of Biological Resources	Human development and well-being is enhanced through sustainable use of biological resources and equitable sharing of the benefits.	
Outcomes	**5-year Targets**	**Indicators**
	Biological resources that support sustainable livelihoods, local food security and health care, especially for poor people, are maintained [CBD TARGET 8.2].	• Resource management plans • CBNRM agreements
	Develop and facilitate the use of diverse approaches and tools, including the ecosystem approach, elimination of harmful fishing practices ... and time/area closures for protection of nursery grounds [JPOI TARGET 4.31 (c): Oceans and Fisheries].	• Fisheries regulations • Management plans • Total Allowable Catch
Footnote: Biological resources refer to species and genes (not ecosystems as a whole).		

5.9. SO 4: Sustainable Use of Biological Resources: Activities, Lead Agents and Support Partners

SO 4: Sustainable Use of Biological Resources	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
4.1 An equitable access, rights and responsibilities regime promotes sustainable use of biological resources.					
4.1.1	For priority biological resources, manage and where appropriate, clarify and promote rights to access/use the resources.	Urgent	DEAT	Provinces, DoA, DAC, DLA, Parks Boards, DWAF, SANBI, researchers, international agencies	
4.1.2	Develop and promote appropriate mechanisms for equitable and sustainable distribution of benefits derived from extractive resource use.	Medium	DEAT	Provinces, DoA, DLA, Parks Boards, DWAF, SANBI, Bioprospecting Trust Fund, National Treasury, NGOs, researchers	
4.1.3	Create an appropriate bioprospecting framework that encourages beneficiation of our indigenous biological resources and knowledge in a way that benefits South Africans.	High	DEAT	DST, NRF, the dti, CSIR, DoA, SANBI, DFA, MRC, DoH, Healers Council, San Council, industry, NGOs, researchers, SANCO, international agencies	
4.1.4	For priority biological resources, clarify and promote responsibilities for control and management of resources.				

SO 4: Sustainable Use of Biological Resources	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
4.2 Partnerships between government, the private sector, organised civil society and communities encourage entrepreneurship, innovation, investment and action at local level.					
4.2.1	Streamline processes and procedures for small scale public-private-community partnerships to encourage partnerships at local level, with a particular emphasis on communal and state land.	Medium	DTI	DLA, Department of Public Works, private sector, international agencies	Initiate process
4.2.2	Develop and grow the natural products sector in a way that encourages value adding, sustainability, entrepreneurship and local economic development.	High	DTI, DST, DAC	DEAT, DoA, Industry, MRC, CSIR, Research Institutions, SALGA, Dept. of Health, traditional healers, NGOs, International agencies, ARC	Poverty relief funding
4.2.3	Provide financial, marketing and management support to biodiversity-based small businesses.	Medium	DTI	DEAT, CSIR, DoA, ARC, NGOs, Industry, DBSA, Banks, Land Bank, international agencies	Regulatory
4.2.4	Promote sustainable use of game mammals and birds as a conservation compatible land use that provides economic benefits.	Medium	DEAT	DoA, DLA, SANBI, PHASA, Conservancy Associations	
4.3 The ecological and social sustainability of extractive use of biological resources is researched, assessed and monitored, and opportunities for improvement are identified and implemented.					
4.3.1	Undertake research on sustainable use, including collating information on extractive use of biological resources, and assessing this use for sustainability, contribution to livelihoods, potential for improved benefits and/or management and identify priority resources.	High	SANBI	DEAT, DST, DoA, Parks Boards, Research Institutions, DWAF (Forestry), NGOs, CSIR, Department of Social Development, international agencies	Reporting, Identify funding
4.3.2	Incorporate indigenous knowledge and cultural considerations into research, management and monitoring of biological resources.	High	DAC, DST, SANBI	DoA, IKSSA (Indigenous Knowledge Systems SA), traditional healers, traditional leaders, universities	

SO 4: Sustainable Use of Biological Resources	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
4.3.3	Assess the potential for appropriate sustainable resource use in protected areas and include this in park management plans.	High	SANBI	DEAT, SANParks, DST, DAC, Parks Boards, Research Institutions, DWAF (Forestry), NGOs, CSIR, Department of Social Development, international agencies	Reporting, Identify funding
4.3.4	Monitor the impact of trade in wildlife and wild plants on biodiversity.	Medium	SANBI, CITES Scientific Authority	Provincial conservation authorities; DEAT; MCM (marine)	Lead role through Working Group1
4.3.5	Implement programmes for ongoing research, assessment and monitoring to fill gaps and further inform policy, strategy and action.	Urgent	SANBI	DST, DoA, Parks Boards, Research Institutions, DWAF (Forestry), NGOs, Department of Social Development, international agencies Reporting, Identify funding	Reporting, Identify funding
4.4 Use of biological resources is well managed to optimise sustainable benefits.					
4.4.1	Prioritise management and/or recovery plans for resources that contribute significantly to livelihoods, are being severely impacted on, and/or are significant in terms of biodiversity, cultural or economic considerations.	High	SANBI	DEAT, Conservation agencies, DoA, DWAF, Provinces, NGOs, DME, international agencies, communities	Poverty relief funding, link to CCD,
4.4.2	Strengthen adaptive management systems for marine living resources to ensure sustainable off-take and recruitment.		DEAT (MCM)	Coastal provinces, communities	
4.4.3	Establish ex situ management programmes, including nurseries, to relieve pressure on harvesting of wild medicinal plants.	Urgent	SANBI, Provinces	DEAT, Conservation agencies, DoA, DWAF, Provinces, communities, traditional healers, IUCN/WWF/TRAFFIC (Guidelines on medicinal plants)	

SO 4: Sustainable Use of Biological Resources	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
4.4.4	Establish community based natural resource management programmes for subsistence and artisanal use of wild resources, such as medicinal plants and fuel wood, by communities.	High	SANBI, Provinces	DEAT, Conservation agencies, DoA, DWAF, Provinces, communities, traditional healers/ leaders, CBOs	
4.4.5	Develop enforceable restrictions on unsustainable use and trade in species of national and international importance.	Urgent		DEAT (Resource Use & MCM)	Provinces, SAPS, Customs and Excise, DTI, DoA, DFA, Local authorities, international agencies

5.10. SO 5: Conservation Areas: Outcomes, 5-year Targets and Indicators

SO 5: Conservation Areas	A network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape.	
Outcomes	**5-year Targets**	**Indicators**
5.1 Biodiversity priority areas identified in the National Spatial Biodiversity Assessment are refined in provincial, regional and local systematic biodiversity plans.	Bioregional plans are developed and published for all priority regions.	• Bioregional plans published
	At least 50% of municipalities in NBSAP priority areas reflect biodiversity priorities in their Spatial Development Frameworks, have at least two projects in their Integrated Development Plans that promote biodiversity, and have staff and budget dedicated to biodiversity management.	• Spatial Development Frameworks • Integrated Development Plans
5.2 The protected area network is secured, expanded and managed to ensure that a representative sample of biodiversity and key ecological processes are conserved.	Protected area network expanded to make progress towards meeting national biodiversity targets in NSBA, to avoid reinforcing existing biases in PA network, and to strengthen the functioning of key ecological corridors. [CBD TARGET 1.2: Areas of particular importance to biodiversity protected.]	• Register of Protected Areas • Protected Area proclamations • Ratio of area protected to maintain biological diversity to surface area [JPOI indicator (Goal 7; Target 9)] • Proportion of land covered by forest [JPOI indicator (Goal 7; Target 9)] • Percentage change per given time period [JPOI indicator (Goal 7; Target 9)] • Percentage of biodiversity target met in protected areas, for all ecosystems, including coastal and marine ecosystems • Protection level (types 1 - 3) of ecosystems as % area [NSoER proposed indicator] • Percentage of coastline under protection in Marine Protected Areas

SO 5: Conservation Areas	A network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape.	
Outcomes	**5-year Targets**	**Indicators**
	Establishment of Marine Protected Areas, including representative networks, by 2012 [JPOI TARGET 4.31 (c)].	• Register of Protected Areas • Protected Area proclamations • Percentage of biodiversity target coastal and marine ecosystems met in protected areas • Percentage of coastline under protection in Marine Protected Areas
	Every protected area has a management plan.	• Protected Area Management Plans • Number of formalised co-management agreements with users
	National funding strategy for protected areas is developed and prioritised implementation is underway.	• Funding strategy • Business plans
	Land reform and programmes to expand the protected area network incorporate tenure, land redistribution and biodiversity considerations in a mutually beneficial way.	• MoUs
	Restore, maintain or reduce the decline of populations of species of selected taxonomic groups and improve the status of threatened species [CBD TARGETS 2.1 and 2.2]	• Numbers of threatened (CE, E, V, DD) species in selected taxonomic groups [NSoER Indicator] • Loss (extinction) of species of major taxonomic groups over time [NSoER Indicator] • Numbers of globally threatened species per biome [NSoER Indicator] • Numbers of regionally threatened species in various taxonomic groups (e.g. mammals, birds, frogs) per province [NSoER Indicator]
5.3 Biodiversity is effectively managed in key ecological corridors and in high priority fragments of natural habitat across the landscape and seascape.	Co-operative framework to improve extension for off-reserve biodiversity conservation is in place, including the use of tools such as incentives, with financial commitment from government and pilots in priority areas.	• Status of natural heritage resources; investment into natural heritage resources; visitors to natural heritage resources
	Biodiversity management plans have been developed, published and implemented for selected threatened ecosystems.	• Biodiversity Management Plans • Biodiversity Management Agreements
	Most useful spatial products and guidelines for provincial and local levels are determined, and a national programme to support provinces and municipalities is developed, with pilots underway in each national priority area.	• Guidelines • Capacity building programmes
	At least five key industries are actively avoiding threatened ecosystems in their production, planning and operations, and invest in managing threatened ecosystems under their control.	• Environmental Management Plans

SO 5: Conservation Areas	A network of conservation areas conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape.	
Outcomes	**5-year Targets**	**Indicators**
5.4 Management plans for species of special concern ensure their long term survival in the wild.	Management plans have been developed, published and implemented for priority species of special concern.	• Biodiversity Management Plans • Biodiversity Management Agreements
	Status of threatened species improved [CBD TARGET 2.2].	• Numbers of species of various taxonomic groups in various threat categories [NSoER Indicator]
5.5. Research and monitoring programmes support the establishment and effective management of the network of conservation areas.	National monitoring and evaluation framework for ecosystems and species is being piloted in priority areas, for threatened ecosystems and priority species of special concern.	• National monitoring and evaluation framework
Footnote: Biodiversity priority areas include threatened ecosystems, ecological corridors, special biodiversity features and under-protected ecosystems.		

5.11. SO 5: Conservation Areas: Activities, Lead Agents and Support Partners

SO 5: Conservation Areas	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
5.1 Biodiversity priority areas identified in the National Spatial Biodiversity Assessment are refined in provincial, regional and local systematic biodiversity plans.					
5.1.1	Undertake systematic biodiversity plans in priority areas identified in the National Spatial Biodiversity Assessment and/or in regional biodiversity plans.	Urgent	SANBI	DEAT, provinces	
5.1.2	Publish bioregional plans in terms of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004).	Urgent	SANBI;	DEAT, conservation authorities, NGOs	DEAT to develop regulations for bioregional plans in terms of NEMBA, Minister to approve bioregional plans
5.2 The protected area network is secured, expanded and managed to ensure that a representative sample of biodiversity and key ecological processes are conserved.					
5.2.1	Expand, consolidate and/or rationalise the protected area network through a range of implementation tools, focusing on priority areas for representation and persistence of biodiversity.	Urgent	DEAT (co-ordination); Conservation agencies (implementation)	SANBI	DEAT should establish a national committee to develop and oversee a plan for expansion, consolidation and rationalisation of the protected area network to meet biodiversity targets and avoid reinforcing existing biases in the protected area network. SANBI to play an advisory role on this.

SO 5: Conservation Areas	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
5.2.2	Build understanding among relevant protected area officials of the variety of implementation tools for expanding the protected area network, and build capacity for using these tools and for managing land consolidation for protected areas.	Urgent	DEAT / Conservation agencies	SANBI, NGOs	
5.2.3	Undertake focused engagement with land reform programmes, and explore opportunities for expanding the protected area network through land reform.	Urgent	DEAT, DLA	Conservation agencies	
5.2.4	Manage protected areas effectively and efficiently, including development of protected area management plans and engaging with surrounding communities and landowners.	Urgent	DEAT (norms & standards); Conservation agencies	SANBI	Develop and publish norms & standards and monitor implementation
5.2.5	Develop a national funding strategy, including cross-financing mechanisms, to ensure that the protected area network is well resourced.	High	DEAT	Conservation agencies, National Treasury	
5.3 Biodiversity is effectively managed in key ecological corridors and in high priority fragments of natural habitat across the landscape and seascape.					
5.3.1	Develop, publish and implement biodiversity management plans for threatened ecosystems in terms of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004), with private and communal landowners as key roleplayers.		SANBI; conservation authorities, landowners		
5.3.2	Build the extension services in conservation agencies, in collaboration with other departments that have extension services, to engage more widely with private and communal landowners.	Urgent	DEAT, conservation agencies	DWAF, provincial departments of agriculture, NGOs (especially through bioregional programmes)	Put on CEC & WG 1 agenda; co-ordination
5.3.3	Ensure that threatened ecosystems, ecological corridors and other special biodiversity features (such as wetlands, coastal dunes and ridges) are given appropriate status in Spatial Development Frameworks, and are adequately weighed in decisions about changes in land-use.	Urgent	DEAT, SANBI, SALGA	DPLG, Municipalities, NGOs, Bioregional Programmes, provincial planning and environmental departments	Provide funding, or facilitate contact with potential funders

SO 5: Conservation Areas	Activities to achieve outcomes	Priority	Lead agency	Support partner/s	Role of DEAT
5.3.4	Engage with major production sectors, such as agriculture, forestry, mining and fisheries, in order to implement biodiversity offsets and to enhance operational standards in areas of high biodiversity significance, with emphasis on long-term persistence of threatened ecosystems and key ecological processes.	High	DEAT	Farming unions, Chamber of Mines, Forestry, and other production sectors, NGOs, conservation agencies, Bioregional Programmes (CAPE, STEP, SKEP etc.)	Strengthen functioning of CEC
5.4 Management plans for species of special concern ensure their long-term survival in the wild.					
5.4.1	Develop, publish and implement management plans for species of special concern, including threatened species, endemic species and high-value useful species, with private and communal landowners as key role players.	Medium (but for some species is more urgent)	DEAT	Depends on species: Co-ordination role for SANBI?	
5.5 Research and monitoring programmes support the establishment and effective management of the network of conservation areas.					
5.5.1	Undertake applied research that addresses key management issues in protected areas.	Urgent	SANBI, SANParks	DEAT, provincial conservation agencies, universities, NGOs, DST, NRF	
5.5.2	Undertake research on key management questions related to biodiversity compatible land and resource use in priority areas outside the formal protected area network.	High	DEAT, SANBI	SANParks, provincial conservation agencies, universities, NGOs, DWAF, DoA, ARC, CSIR, DST, NRF	
5.5.3	Monitor management effectiveness in protected areas, with an emphasis on biodiversity objectives.	Medium	SANBI, SANParks	DEAT, provincial conservation agencies, universities, DST, NRF	
5.5.4	Monitor the effectiveness of interventions and programmes in priority areas outside formal protected areas, with an emphasis on biodiversity objectives.	Medium	DEAT, SANBI	SANParks, provincial conservation agencies, universities, DST, NRF NGOs, DWAF, DoA, ARC, CSIR	

GLOSSARY OF TERMS

Alien species	a species that is not an indigenous species; or an indigenous species that is translocated or intended to be translocated outside its natural distribution range through human intervention (NEMBA).
Aquatic	relating to water (freshwater and marine)
Artisanal	subsistence or light commercial use of a resource using traditional methods and techniques
Benefit	any benefit arising from use of biodiversity, whether commercial or not, including both monetary and non-monetary returns [note that NEMBA limits the definition to such benefits in relation to bioprospecting]
Beneficiation	adding value to a product or biological resource
Access and benefit sharing	in the context of the CBD, access and benefit sharing (ABS) is a phrase used to describe the access granted by a Contracting Party to the CBD to its genetic resources (where the Party is the country of origin of those resources), to another Contracting Party to the CBD, where such access is on mutually agreed terms and subject to fair and equitable sharing of the results and benefits of any research carried out on the resources. The CBD does not define fair and equitable benefit-sharing. In the context of South Africa, the terms access and equitable sharing of benefits are also used in a broader context and include rights to use and benefit from a wide range of resources, such as species, land, water and protected areas
Biodiversity priority area	a spatial area which is considered a national priority for conservation and integrated planning, based on the National Spatial Biodiversity Assessment (NSBA)
Biodiversity management	see also Conservation below. The NBSAP refers to biodiversity management in the widest sense and includes conservation as a form of management to achieve certain goals and objectives
Biological diversity	the variability among living organisms from all sources, including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are a part; this includes diversity within species, between species and of ecosystems (CBD) (also shortened to "biodiversity"). Biodiversity includes the number, abundance and composition of genotypes, species, populations, functional types and landscape units within a given system [Millennium Ecosystem Assessment]
Biological resources	includes genetic resources, organisms or parts thereof, populations, or any other biotic component of ecosystems with actual or potential use or value for humanity [CBD]; the term therefore refers mainly to the use of species and genes
Biome	any major ecological community of organisms, usually characterised by a dominant vegetation type [White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity, 1997]. Correlation of dominant plant life forms with climatic variations leads to the classification of ten biomes in South Africa: desert, succulent Karoo, fynbos, Nama Karoo, grassland, savanna, Albany thicket, forest, and the two island biomes, sub-Antarctic tundra and polar desert
Bioprospecting	research on, or development or application of, indigenous biological resources for commercial or industrial exploitation, including systematic search and collection of resources, and utilisation of traditional and indigenous knowledge

GLOSSARY OF TERMS

Bioregion	a geographical area that is spatially defined; contains whole or several nested ecosystems; is characterised by its landforms, vegetation, culture and history and contains biodiversity which needs to be managed [NEMBA provides for the publication of bioregional plans for such bioregions. Bioregional planning in South Africa has to date focused on biomes (such as Fynbos) and administrative areas (such as KwaZulu-Natal province)]
Biotechnology	any technological application that uses biological systems, living organisms, or derivatives thereof, to make or modify products or processes for specific use (CBD)
Capacity	the power of something (a system, organisation or person) to produce or to perform functions effectively, efficiently and sustainably - this implies that capacity is not a passive state, but part of a continuing process (UNDP)
Community	a community of people living or having rights or interests in a distinct geographical area (NEMBA); any group of persons, or a part of such a group, who share common interests and who regard themselves as a community (NEMA)
Conservation	management of human use of the biosphere to yield the greatest benefit to present generations while maintaining the potential to meet the needs and aspirations of future generations; this includes sustainable use, protection, maintenan n and the enhancement of the natural environment [White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity, 1997]
Conservation areas	a geographically defined area where conservation of important biodiversity is needed in order to ensure sustainable benefits (note that this includes areas outside the formal protected area network)
Critically Endangered	species or ecosystem facing an extremely high risk of extinction in the wild in the near future
Ecosystem	a dynamic complex of plant, animal and micro-organism communities and their non-living environment interacting as a functional unit [CBD, NEMBA]
Ecosystem services	the services provided to society by well-functioning ecosystems, such as food, clean water, carbon storage and climate regulation, disease management, spiritual fulfillment and aesthetic enjoyment
Endangered	species or ecosystem facing a very high risk of extinction in the wild in the near future
Endemic	a plant or animal species confined to, or exclusive to, a particular specified geographic area
Environment	the surroundings within which humans exist, which is made up of the land, water and atmosphere of the earth; microorganisms, plant and animal life and the interrelationships amongst these; as well as the physical, chemical, aesthetic and cultural properties and conditions of these that influence human health and well-being (NEMA)
Ex-situ conservation	conservation of components of biodiversity outside their natural habitats (CBD)
Genetic resources	genetic material (material of plant, animal, microbial or other biological origin containing functional unity of heredity) of actual or potential value (CBD); and the genetic potential or characteristics of any species (NEMBA)

GLOSSARY OF TERMS

Genetically Modified Organism	(also referred to as living modified organism): any organism, or biological entity capable of transferring or replicating genetic material, that possesses a novel combination of genetic material, obtained through the use of modern biotechnology [CBD, Cartagena Protocol on Biosafety]
Habitat	a place where a species or ecological community naturally occurs [CBD, NEMBA]
Indigenous species	a species that occurs, or has occurred historically, naturally in a free state within the borders of the Republic of South Africa, but excludes any species that has been introduced into the Republic as a result of human activity [NEMBA, NEMPAA]
In-situ conservation	conservation of ecosystems and natural habitats and the maintenance and recovery of viable populations of species in their natural surroundings (CBD)
Invasive species	any species whose establishment and spread outside its natural distribution range threatens (or has the potential to threaten) ecosystems, habitats or other species, and which may result in economic or environmental harm or harm to human health (NEMBA)
Least Concern	species that is widespread and abundant and does not qualify as threatened or near threatened in the near future
Near Threatened	species close to qualifying for, or likely to qualify as threatened (i.e. critically endangered, endangered or vulnerable) in the near future
Opportunity cost	the social and economic costs of the loss of the ability to use a resource for an alternative activity as a result of the chosen activity (EIA Regulations)
Protected area	a geographically defined area which is designated or regulated and managed to achieve specific conservation objectives (CBD) - ** note: NEMPAA defines protected areas as "a special nature reserve, a national park, a nature reserve, or a protected environment, being protected areas declared in terms of the NEMPAA, thereby excluding protected areas declared in terms of other legislation from most of the requirements of the Act, except the requirement to be listed in the Register of Protected Areas"
Red Data Lists	lists of species assessed in terms of a number of criteria and classified in terms of threatened status (critically endangered, endangered, vulnerable, least concern and data deficient)
Reserve	the quantity and quality of water required to satisfy basic human needs by securing a basic water supply; and to protect aquatic ecosystems in order to secure ecologically sustainable development and use of the relevant water resource [National Water Act, 1998 (Act 36 of 1998]
Species	a kind of animal, plant or other organism that does not normally interbreed with individuals of another kind, and includes any sub-species, cultivar, variety, geographic race, strain, hybrid or geographically separate population (NEMBA)
Sustainable development	integration of social, economic and environmental factors into planning, implementation and decision making, so as to ensure that development serves present and future generations (NEMA)

GLOSSARY OF TERMS

Sustainable use	the use of components of biological diversity, or biological resources, in a way and at a rate that does not lead to long-term decline of the resource and does not disrupt the ecological integrity of the ecosystem in which it occurs, thereby maintaining its potential to meet the needs and aspirations of present and future generations [CBD/NEMBA]
Terrestrial	land-based
Threatened	species and ecosystems that are considered critically endangered, endangered and vulnerable are collectively regarded as threatened
Vulnerable	species or ecosystems facing a high risk of extinction in the wild in the near future

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Department:
Environmental Affairs and Tourism
REPUBLIC OF SOUTH AFRICA

PRIVATE BAG X447, PRETORIA, 0001
TEL: +27 12 310 3911
FAX: +27 12 322 2682
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