Department of Environmental Affairs and Tourism,
Republic of South Africa

SOUTH AFRICA'S
FOURTH NATIONAL REPORT
TO THE CONVENTION ON BIOLOGICAL DIVERSITY

March 2009

PREFACE

South Africa's Fourth National Report to the Convention on Biological Diversity has been prepared in accordance with Article 26 of the Convention and COP decision VIII/14, whereby parties are required to submit their fourth national reports by 30 March 2009. The structure of the report is based on the *Guidelines for the Fourth National Report* published by the Convention.

The report was prepared with wide-ranging input from relevant stakeholders through interviews, a workshop and written inputs on a draft of the report (see Appendix I for further information on the preparation of the report). Thanks go to all those who contributed.

EXECUTIVE SUMMARY

[Please note that references are not provided in the text of this executive summary. Please refer to the full report for the relevant references.]

1. Introduction

The Convention on Biological Diversity (CBD) opened for signature at the United Nations Conference on Environment and Development (UNCED) in Rio de Janeiro in June 1992. It came into force on 29 December 1993 and currently has 191 Parties. The principal objectives of the Convention are:

- the conservation and sustainable use of biological diversity, and
- the fair and equitable sharing of benefits arising from its utilisation.

The Convention translates its guiding objectives of conservation, sustainable use and equitable sharing of benefits into binding commitments in its articles, and there are seven thematic programmes of work and several cross-cutting issues that parties are required to implement. Parties have also adopted the Strategic Plan of the CBD whereby they have committed themselves to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth. This target was subsequently endorsed by the World Summit on Sustainable Development.

South Africa became a signatory to the CBD in 1995. The Fourth National Report has been prepared in compliance with the reporting requirements under the CBD, to provide an assessment of the status, trends and threats relating to South Africa's biodiversity, and to report on the actions, progress in implementation, obstacles encountered and future priorities for the country's biodiversity.

2. Overall status, trends and threats to biodiversity

Status and trends

South Africa's diversity of topography, climate, geology and people provide it with a wide variety of natural and cultural resources. It is considered one of the most biologically diverse countries in the world due to its species diversity and endemism as well as its diversity of ecosystems. South Africa occupies only 2% of the world's land surface area yet is home to 10% of the world's plant species and 7% of the reptile, bird and mammal species. Its oceans are home to about 10 000 species, representing about 15% of the world's marine species with more than 25% of these species endemic to South Africa. Sixty-five percent of its 23 000 plant species are endemic to South Africa (Table 1). 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 in the world.

The Cape Floral Kingdom is the smallest, richest and most threatened of the world's six floral kingdoms, and falls entirely within South Africa. It is home to 9 000 plant species, or 38% of South Africa's plant species, of which 1 850 (over 20%) are threatened with extinction. There are three globally recognised biodiversity hotspots (areas with especially high concentrations of biodiversity which are under serious threat) in South Africa: the Cape Floristic Region; the Succulent Karoo, which is shared with Namibia; and the Maputaland-Pondoland-Albany hotspot, shared with Mozambique and Swaziland. South Africa has about 100 Important Bird Areas and there are also eight World Heritage Sites, five Biosphere Reserves under UNESCO's Man and the Biosphere Programme, and 19 RAMSAR sites, being wetlands of international importance.

Table 1: Species richness within South African taxa in relation to the world (adapted from Rouget *et al.* 2004; additional information from DEAT 2005b and Raimondo et al 2009)

Taxon	# of described species in SA	% of the earth's species	% of species endemic to SA
Plants	23 456	10.0	65
Invertebrates	77 500	5.5	70
Amphibians	84	2.1	56
Reptiles	286	4.6	36
Freshwater fish	112	1.3	51
Marine fish	2 150	16	13
Mammals	227	5.8	16
Birds	718	8.0	6

The terrestrial biodiversity of South Africa can be divided into nine biomes, rivers fall within 31 different river ecoregions, and estuaries and coastal marine habitats fall into three biogeographical zones around the coast. In addition, the numerous structural types of vegetation, rivers, wetlands, estuaries and marine habitats add considerably to the biodiversity within these environments.

National Red List assessments of the status of South Africa's species indicate that 10% of South Africa's birds and frogs, 20% of its mammals and 13% of its plants are threatened. The National Spatial Biodiversity Assessment (NSBA) 2004 showed that of the 440 vegetation types of South Africa 5% are critically endangered, 12% are endangered and 16% are vulnerable. The largest proportion of the threatened vegetation types occur in the fynbos biome which is part of the Cape Floristic Region. Currently, 6.5% of the country's surface area is included in protected areas, and a National Protected Areas Expansion Strategy has been drafted that aims to increase the area under protection to 8.8% by 2013 and eventually to 12% in the next twenty years.

South Africa is a water-scarce country and there are substantial pressures on its inland aquatic ecosystems. The NSBA 2004 showed that 82% of main river ecosystems are threatened, with 44% critically endangered, 27% endangered, and 11% vulnerable. A wide variety of organisms inhabit South Africa's freshwater ecosystems, including invertebrates, molluscs, fish and others. Of these, only fish have been assessed in terms of their conservation status and 36% of the country's freshwater fish are threatened.

Although some are in excellent condition, a good proportion of South Africa's 259 estuaries are in a poor state of health. Three of the thirteen estuary groups are critically endangered, a further five are endangered and two are vulnerable.

Of South Africa's 34 marine biozones, 65% are threatened, with 12% critically endangered, 15% endangered and 38% vulnerable. Most of the critically endangered marine ecosystems occur on the west coast of the country. The status of marine species has not been comprehensively assessed but they are heavily impacted by extractive use for human consumption. Stocks of eleven of the line fish species are considered collapsed. While 21.5% of the coastline is in Marine Protected Areas (MPAs), only 9% is fully protected as no-take zones. Of South Africa's Exclusive Economic Zone 0.4% lies within MPAs, with less than 0.2% in no-take zones.

Threats

South Africa's biodiversity is facing threats on several fronts, including habitat loss and degradation, invasive alien species, flow modification, over-harvesting, pollution and climate change (Table 2).

Table 2: Relative importance of different types of anthropogenic threats on terrestrial, freshwater, estuarine and marine ecosystems in South Africa

	Terrestrial	Freshwater	Estuarine	Marine
Habitat loss and degradation	XXX	XX	XX	XX
Flow modification	X	XXX	XXX	X
Invasive alien species, hybridisation and GMOs	XXX	XXX	X	XX
Over-harvesting	XX	X	XXX	XXX
Pollution	X	XX	X	X
Climate change	XXX	XXX	XXX	XX

Many areas of natural habitat are replaced, often irreversibly, by alternative land uses such as urban development, industrial and mining development, agricultural activities such as clearing land for cultivation of crops, or forestry plantations. An emerging threat that could result in substantial further loss of natural habitat (and additional pressure on freshwater resources) is crops for biofuel production. Aquatic habitats can be completely transformed by canalisation and marine habitats can be destroyed by trawling and other types of development.

Habitat degradation threatens substantial parts of the remaining natural area, much of which consists of rangelands. Livestock grazing can be compatible with biodiversity conservation if appropriately managed. However, if the rangeland areas that cover much of the country are allowed to degrade through poor management, they will no longer support the biodiversity they originally sustained.

South Africa is a water-scarce country and many of the economic activities in the country are limited by the availability of water. Thus, the country's rivers are heavily utilised and dammed, with more than 60% of this water used for irrigation. This results in an alteration in both the volume of water flowing as well as the seasonality of water flows into rivers, estuaries and eventually the oceans. In some cases flows are also impacted by the discharge of effluents or treated sewage.

Purposely or accidentally-introduced alien species and varieties may become invasive, or may result in hybridisation with local species, resulting in the loss of genetic diversity. Where introduced species have an ecological advantage, they spread independently, replacing indigenous vegetation and species, thus causing a loss of biodiversity and affecting the functioning of ecosystems. There are concerns that Genetically Modified Organisms (GMOs) may have similar impacts.

A wide variety of South African species play a vital role in our economy and are used for purposes such as medicines, food sources, building materials and exotic ornamental plants or pets. All of these uses involve extraction or harvesting of the species from the environment. If harvesting is not at sustainable levels it can have a detrimental effect on the species, reducing populations faster than they can regenerate naturally. Over-harvesting of marine living resources is the largest threat to the marine environment in South Africa.

The discharge of industrial effluents into our water systems as well as the runoff from agricultural lands, domestic and commercial sewage, acid mine drainage and litter enter water systems, bringing chemicals leached from these areas, thereby polluting water systems and having a detrimental effect on biodiversity.

The change in climatic conditions being experienced across the globe as a result of the increased concentration of greenhouse gases in the atmosphere also affects biodiversity. South Africa emits more greenhouse gases per person than many industrialised countries due mainly to its reliance on coal for electricity with the energy sector. Climate change will have a potentially severe impact on

South Africa's biodiversity with the projected decline in the reduction of the area covered by the current biomes of 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. Less rainfall and higher temperatures could lead to more extinctions as plants and animals migrate towards the less affected eastern parts, but in the contemporary fragmented landscape it is problematic for species to move as fragments of natural habitat are sparse and disjointed. The functioning of ecosystem services could be compromised with ecosystem processes that may be affected through changes in biodiversity being community respiration, decomposition, nutrient retention, plant productivity and water retention.

Implications of biodiversity loss

The loss and degradation of South Africa's biodiversity has serious implications for its society and economy. Natural ecosystems provide many essential services such as the provision of clean water and air, prevention of soil erosion, pollination of crops, provision of medicinal plants, nutrient cycling, provision of food and shelter and the meeting of spiritual, cultural, aesthetic and recreational needs. Large portions of the country's economy are heavily dependent on biodiversity including the fishing industry, game and livestock ranching, horticulture and agriculture based on indigenous species, commercial and subsistence use of medicinal plants, and ecotourism.

A recent estimate is that total value added to the economy by all provisioning, regulating and cultural ecosystem services in South Africa, excluding the marine environment and excluding the value generated by the extraction of water resources, is in the order of R73 billion per annum, which is approximately 7% of the country's annual Gross Domestic Product. In addition, the majority of South Africans are highly dependent on natural resources for their livelihoods.

In addition, intact ecosystems (i.e. ecosystems which are in a natural or near-natural state) are likely to play an important role in providing cost-effective resilience to the impacts of climate change, including buffering human settlements and activities from the impacts of extreme climate events.

The overall socio-economic well-being of the people of South Africa is dependent on the achievement of a balance between development and conservation which involves the sustainable use of its biodiversity. Continued loss of biodiversity and ecosystem health is likely to have dire social and economic consequences. It is thus essential that the socio-economic role of ecosystems is recognised and integrated into all kinds of decision-making.

3. Key actions supporting CBD objectives

To support its obligations under the CBD and the achievement of is objectives, South Africa has expended considerable effort in developing an overarching policy and legislative framework for biodiversity management and its sustainable use, in support of the development agenda of the country. As a developing country dealing with the legacy of apartheid, South Africa has many socio-economic priorities, including providing education, health, housing and other basic social services. Nevertheless, biodiversity conservation has received considerable resources and attention in the period since the country's transition to democracy in 1994.

The policy and legislative framework for biodiversity management has been established to support the CBD objectives and is summarised below.

South Africa has a well developed policy framework for biodiversity management with the basis laid by the *White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity*, published in 1997. This and other relevant policies are given effect through various pieces of legislation, with the biodiversity related legislation harmonised under the overarching framework of

the *National Environmental Management Act, 107 of 1998* which establishes principles for environmental legislation. The *National Environmental Management: Biodiversity Act, 10 of 2004* and the *National Environmental Management: Protected Areas Act, 57 of 2003* are key supporting pieces of legislation.

The Biodiversity Act established the *South African National Biodiversity Institute* (SANBI) as a public entity falling under the Department of Environmental Affairs and Tourism (DEAT), with the mandate to play a leading role in South Africa's national commitment to biodiversity management. In partnership with DEAT and the biodiversity sector, SANBI is tasked to lead the biodiversity research agenda, provide knowledge and information, give policy support and advice, manage botanical gardens as 'windows' to our biodiversity for leisure, enjoyment, spiritual upliftment and education, and engage in ecosystem restoration and rehabilitation programmes and best-practice models to manage biodiversity better.

South Africa has recognised the importance of spatial biodiversity planning to identify geographic biodiversity priority areas as a basis for directing conservation efforts in the country. The first comprehensive national spatial assessment of the status of biodiversity at the ecosystem level was the *National Spatial Biodiversity Assessment (NSBA) 2004*. The NSBA used systematic biodiversity planning techniques to determine the status of ecosystems and identify national priorities for conservation action. It dealt with terrestrial, river, estuarine and marine environments. The NSBA will be revised every five years, with the NSBA 2010 underway.

South Africa published its *National Biodiversity Strategy and Action Plan* (NBSAP) in 2005. The NBSAP sets out a comprehensive long-term strategy for the conservation and sustainable use of South Africa's biodiversity, including fifteen year targets. The overall 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. Five strategic objectives (Box 1) support the attainment of this goal, and for each strategic objective the NBSAP identifies outcomes, activities, targets and indicators. The implementation of these activities contributes to South Africa supporting the CBD objectives.

Box 1: Strategic Objectives of the NBSAP

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

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

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

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

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

The Biodiversity Act requires that a *National Biodiversity Framework* (NBF) be developed and updated every five years. A draft NBF was gazetted for public comment during 2007, and the final NBF has recently been approved and will be gazetted shortly. The NBF's purpose is to provide a framework to co-ordinate and align the efforts of the many organisations and individuals involved in conserving and managing South Africa's biodiversity in support of sustainable development. It focuses attention on the most urgent strategies and actions required for conserving and managing biodiversity and identifies the roles and responsibilities of key stakeholders. The NBF builds on both the NSBA and the NBSAP and identifies 33 Priority Actions which provide an agreed set of priorities to guide the work of the biodiversity sector for the five years to 2013. These priority actions are aligned to the five strategic objectives of NBSAP.

South Africa's *National Climate Change Response Strategy* and *National Action Programme for combating land degradation* both incorporate biodiversity-related matters, while the recently published *National Framework for Sustainable Development* and Discussion Document *Towards an Anti-Poverty Strategy for South Africa* both take cognisance of the important role that healthy ecosystems play in sustainable development.

South Africa is in the process of developing a *National Biodiversity Monitoring and Reporting Framework* (NBMRF) together with headline indicators. The NBMRF aims to track the status of biodiversity over time and requires data that are comparable over a number of years. It has been a challenge to find ways of integrating existing data sets and making them comparable to produce time-series statistics as many of these data sets are "once-off" studies, often covering only a portion of the country.

4. Progress on national implementation

With the enabling framework largely established for biodiversity management, the focus of the sector is on implementing the activities highlighted in the NBSAP and NBF. Some of the key outputs and areas of significant progress are outlined briefly below.

The *National Protected Area Expansion Strategy* (NPAES) has been developed to achieve cost effective protected area expansion to conserve a representative sample of ecosystems and species for ecological sustainability and increased resilience to climate change. The NPAES sets targets for protected area expansion (Table 3), uses systematic biodiversity planning techniques to provide maps of the most important areas for protected area expansion, and makes recommendations on mechanisms to achieve protected area expansion (with strong emphasis on contractual protected areas with private and communal landowners in addition to traditional state-owned protected areas).

The *National Freshwater Ecosystems Priority Areas* (NFEPA) project is a two-year partnership project that runs until July 2010 and aims to:

- identify a national network of freshwater ecosystem priority areas, including rivers, wetlands and estuaries, using systematic biodiversity planning techniques and incorporating expert review;
- develop an institutional basis for implementing the freshwater ecosystem priority areas through engaging with key stakeholders and through pilot projects in at least two Water Management Areas.

Table 3: Summary of land-based and marine protected area targets and areas required to meet targets

	20-year target	Current protection level*	Addition needed to meet 20-year target	Addition needed in next 5 years
Land-based	12%	6.5% (7.9m ha)	8.8% (10.8m ha)	2.2% (2.7m ha)
Marine inshore**	No-take: 15%	No-take: 9.1% (334km) ***	No-take: 6% (234km)	No-take: 1.5% (56km)
	Total: 25%	Total: 21.5% (785km)	Total: 9.6% (353km)	Total: 2.4% (88km)
Marine offshore: mainland EEZ	No-take: 15%	No-take: 0.16% (1 671 km^2)	No-take: 14.8% (159 111 km^2)	No-take: 3.7% (39 887 km^2)
	Total: 20%	Total: 0.4% (4 172 km^2)	Total: 19.6% (210 205 km^2)	Total: 4.9% (52 551 km^2)
Marine offshore: Prince Edward Islands EEZ	No-take: 15%	No-take: 0% ****	No-take: 15% (70 032 km^2)	No-take: 3.8% (17 508 km^2)
	Total: 20%	Total: 0%	Total: 20% (93 376 km^2)	Total: 5% (23 344 km^2)

Table notes:

* An area is considered protected if it falls within a protected area recognised in the Protected Areas Act.

** Inshore marine targets are measured in kilometres of coastline because of the varying distances which inshore MPAs extend from the coastline. Inshore is considered to mean from the high water mark to the 30m depth contour. All inshore MPAs extend at least this far. In future a more accurate area-based measure for inshore MPA targets will be used, but this is not possible with current data.

*** The protection levels reflected in this table exclude the Stilbaai MPA that was declared in 2008, with more than 50% of this MPA being "no-take"

**** Fishing has been excluded from a 12 nautical mile exclusion zone immediately around the islands (3% of the Prince Edward Islands EEZ) but the area has not been promulgated as an MPA. The Prince Edward Island area will be gazetted for formal consideration as an MPA during 2009.

In addition to the above, much of the progress can be described under the theme of mainstreaming biodiversity which includes several cross-cutting issues and covers many of the obligations under the CBD. Mainstreaming biodiversity is the incorporation and integration of biodiversity as an important aspect of planning, decision-making, land-use and production methods to achieve sustainable development, particularly in those sectors whose core business is not biodiversity conservation.

Within the constraints of the limited resources available to the sector, South Africa has made substantial progress with mainstreaming biodiversity. It has embraced the ecosystem approach and applies it in planning and in implementing many programmes. Substantial efforts are being made to *mainstream biodiversity in land-use planning and decision-making*, with various tools under development to achieve this, such as the listing of threatened ecosystems in terms of the Biodiversity Act, provincial spatial biodiversity plans and bioregional plans which identify critical biodiversity areas based on systematic biodiversity planning techniques. The intention is to include threatened ecosystems and critical biodiversity areas in the municipal Integrated Development Plans and Spatial Development Frameworks required in terms of local government legislation. Including biodiversity considerations in land-use planning and decision-making will seek to ensure that no further loss of natural habitat takes place in those priority biodiversity areas. Progress is being made in this regard with projects under way in several provinces. Environmental Impact Assessments are required in South Africa, but often do not take adequate account of biodiversity. Tools to support the *mainstreaming of biodiversity in environmental assessment* are under development, including ecosystem guidelines for environmental assessment (piloted in the Western Cape province), generic terms of reference for biodiversity specialist studies, and a policy framework for biodiversity offsets.

Mainstreaming measures have been effectively applied through a suite of *bioregional programmes* with co-ordination units hosted by SANBI. These multi-sectoral multi-partner programmes are aimed at conserving biodiversity in South Africa's most threatened biomes and ecosystems while linking with socio-economic development. The programmes include a high-level vision, strategy and action plan that co-ordinates several site-specific projects which pilot innovative approaches to biodiversity management. Bioregional programmes are being implemented in the Cape Floristic Region and Succulent Karoo biodiversity hotspots as well as in the grassland biome and marine ecosystems. A freshwater programme has recently been initiated. In addition, a National Municipal Biodiversity Programme has been initiated to mainstream biodiversity in municipal planning and decision-making, building on lessons from pilot projects in the bioregional programmes, and in partnership with the Department of Provincial and Local Government. Bioregional programmes have demonstrated increased efficiency and effectiveness of conservation actions through the provision of co-ordination at the biome level between many partners in the public, private and NGO sectors.

Several multi-sectoral programmes that integrate biodiversity conservation with government's socio-economic priorities have been initiated under the government's Expanded Public Works Programme (EPWP). There are several of these *EPWP programmes in the environmental sector*, which seek to secure South Africa's natural heritage while creating immediate and long-term jobs and social benefits. The flagship programme is Working for Water that seeks to eradicate and control invasive alien species while creating jobs, developing skills and creating secondary industries. Similar projects are also under way for wetlands, fire management, coast care and land care.

The biodiversity sector has established *business and biodiversity initiatives* with a number of production sectors aimed at enhancing sustainable production through the development and implementation of best-practice guidelines and other mechanisms that encourage biodiversity friendly methods of production with the aim of reducing the loss of natural habitat, over-abstraction of water resources and over-harvesting of marine resources. The mechanisms involve labelling and certification schemes to accredit the production methods. Initiatives are under way in several sectors including wine, fishing, honey, cut flowers, rooibos tea, potatoes, sugar, red meat, citrus and forestry.

Fiscal incentives that encourage biodiversity-friendly management are being developed and amendments to the tax legislation were recently introduced whereby specified conservation costs are deductible for taxpayers who are involved in formal contractual agreements in terms of the Protected Areas Act and the Biodiversity Act. These, together with the biodiversity stewardship programmes that are being implemented in several provinces, should provide significant impetus to efforts to expand the protected area network by incorporating private land with priority biodiversity, without the outright purchase of this land by government for which limited funds are available.

A further opportunity for conservation is the *land restitution and reform* process that is in progress where ownership of land is being restored or transferred to people or communities that were dispossessed of land during apartheid. A number of claims have been lodged on protected areas and an agreement between the national ministers provides that this land be retained as a protected area but with participation by the communities in management and benefits from the park. A model that is developing is a land settlement agreement between the state and the claimants, and thereafter a process of engagement which results in a co-management and benefit sharing arrangement between the new land owners and the conservation agency responsible for the management of that particular protected area. The land reform process may present further opportunities to expand the protected area network by establishing community-owned protected areas, especially in agriculturally marginal land, where communities can benefit from eco-tourism and sustainable

harvesting of resources. A land reform and biodiversity stewardship programme is in the early stages of being developed.

5. Major obstacles in implementation

As outlined above, substantial progress has been made in implementing the South Africa's commitments to the CBD. Nevertheless challenges remain.

There are many examples of where South Africa is falling short of its targets. Its land-based protected area network at 6.5% of the surface area is well below the twenty-year 12% target – although the NPAES addresses this, the strategy still has to be implemented and is likely to encounter challenges during implementation. Similarly, the fully protected "no take" marine protected areas at 9% falls short of the 15% target. Other examples are the collapse of ten species of important line fish, the threat that illegal harvesting and poaching poses to threatened species such as cycads, abalone and rhino, and the high level of mean annual runoff used by invasive alien species, putting further pressure on an already stressed water supply and on freshwater ecosystems.

Financial resources to implement priority activities are an ongoing challenge – national and provincial government support and allocation of budget to organs of state with biodiversity responsibilities is critical, as is external support from sources such as the Global Environment Facility and the Critical Ecosystem Partnership Fund – without this support, the bioregional programmes would not have been able to progress as they have done. The financial challenge is illustrated by the estimate that R7.6 billion is required to implement the 33 Priority Actions of the NBF over the next five years. Of this amount, just over half is currently budgeted by the implementing agents, meaning that an additional amount of R3.4 billion will have to be secured if the actions are to be implemented effectively.

Human capacity for the biodiversity sector is a further obstacle. A Human Capital Development Strategy is being developed to address the transformation of the sector and the shortage of skills, but the reality is that the sector is struggling to attract and retain an adequate number of skilled individuals to undertake the huge amount of work that is required. The roots of this problem lie in ongoing weaknesses in the education sector, particularly in maths and science education, resulting in a small pool of young South Africans, especially young black South Africans, with the requisite qualifications to pursue biodiversity-related careers. High staff turnover and a large percentage of vacant posts in the various departments and agencies responsible for biodiversity management bear testimony to this challenge. The lack of capacity impacts on important activities such as enforcement, research and monitoring.

In spite of the progress made in establishing a coherent policy and legal framework for biodiversity conservation, there remains an under-appreciation among key decision-makers, both in government and the private sector, of the important role of biodiversity in the economy and for society at large. The sector needs to find ways of communicating its message more effectively.

6. Future priorities

The NBF sets out an agreed set of top priority actions, aligned with the five strategic objectives of the NBSAP, that will guide the work of the biodiversity sector over the period 2008 to 2013 (Box 2). As noted above, funding for implementation of the activities is a challenge, with just over half of the necessary budget secured and an additional R3.4 billion required over the five-year period for effective implementation. This amount needs to be seen as an investment in a renewable,

appreciating asset that contributes to the provision of valuable ecosystem services currently estimated at R73 billion per year.

Among the priority actions identified in the NBF particular mention can be made of the importance of mainstreaming biodiversity at the municipal level (addressed through priority actions 12 and 13), exploring the role of intact natural ecosystems in climate change resilience (addressed through priority action 15), mainstreaming biodiversity in production sectors through business and biodiversity initiatives, including in the marine environment (priority action 20), expansion of the offshore marine protected area network which currently falls very far short of targets (priority action 30), and development and strengthening of biodiversity stewardship programmes to support land-based protected area expansion on private and communal lands (priority action 31).

Box 2: Priority Actions identified in the NBF

Strategic Objective 1
An enabling **policy and legislative framework** integrates biodiversity management objectives into the economy.
Priority Actions
1. Make the case for the value of biodiversity as a corner stone of sustainable development
2. Integrate biodiversity considerations into fiscal policy through environmental fiscal reform
3. Integrate biodiversity considerations in land-use planning and decision-making, by developing tools for supporting and streamlining environmental decision-making
4. Finalise the regulatory framework for the prevention, containment and eradication of invasive alien species
5. Strengthen the regulatory framework for species of special concern
6. Finalise the regulatory framework for bioprospecting, access and benefit sharing

Strategic Objective 2
Enhanced **institutional effectiveness and efficiency** ensures good governance in the biodiversity sector
Priority Actions
7. Establish and implement a human capital development strategy for the biodiversity sector to address transformation and scarce skills
8. Fill key biodiversity information gaps
9. Improve biodiversity information management and access
10. Establish and implement a national biodiversity research strategy
11. Establish and implement a national monitoring and reporting framework for biodiversity
12. Establish a national programme to build the capacity of municipalities to include biodiversity opportunities and constraints in their planning and operations
13. Establish pilot projects to explore mechanisms for integrated natural resource management at the district municipal level
14. Support the development and strengthening of biome and ecosystem programmes

Strategic Objective 3
Integrated terrestrial and aquatic management across the country minimises the impacts of threatening processes of biodiversity, enhances ecosystem services and improves social and economic security
Priority Actions
15. Develop and implement an integrated programme for ecosystem adaptation to climate change, with an emphasis on ecosystems vulnerable to climate change impacts
16. Develop provincial spatial biodiversity plans in additional provinces
17. Publish bioregional plans in terms of the Biodiversity Act
18. List threatened or protected ecosystems in terms of the Biodiversity Act
19. Develop Biodiversity Management Plans for species of special concern and threatened ecosystems
20. Work with key production sectors to minimise loss and degradation of natural habitat in threatened ecosystems and critical biodiversity areas
21. Implement the IAS regulations

22. Implement the cross-sector policy objectives for conservation of inland water biodiversity
23. Incorporate biodiversity conservation objectives in the work of Catchment Management Agencies
24. Develop and implement effective measures for management and control of activities relating to Genetically Modified Organisms in order to manage their impact on the environment

Strategic Objective 4
Human development and well-being is enhanced through the **sustainable use** of biological resources and equitable sharing of benefits
Priority Actions
25. Address illegal and unregulated fishing and seafood trade, especially of line fish and abalone
26. Develop an implementation strategy for bioprospecting, access and benefit sharing regulations
27. Facilitate the development of the natural products sector
28. Improve knowledge of sustainable extractive use of terrestrial resources

Strategic Objective 5
A **network of protected areas and conservation areas** conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape
Priority Actions
29. Finalise the twenty-year National Protected Area Expansion Strategy, underpinned by national biodiversity targets
30. Implement the National Protected Area Expansion Strategy
31. Establish and strengthen provincial biodiversity stewardship programmes
32. Strengthen programmes that support the informal conservation area system
33. Develop and implement a National Botanical Gardens expansion strategy.

Regional Co-operation
1. Strengthen and improve the development of integrated management and tourism plans of the TFCAs and transboundary World Heritage Sites
2. Develop and implement appropriate incentives for biodiversity conservation and its sustainable use in co-operation with our neighbouring countries
3. Develop, implement and strengthen programmes for international scientific collaboration, sharing of information and technology transfer
4. Develop and implement a co-ordinated regional programme to increase awareness, knowledge and appreciation of biological resources at various levels
5. Strengthen the research and development capacity of the protected area system

7. Conclusion

Within the constrained resources at its disposal, South Africa's biodiversity sector has made substantial progress in the conservation and sustainable use of biodiversity for the benefit of its people. However, the threats to biodiversity, and thus to society, remain very real. Additional resources, capacity and innovation are required to effectively counter these threats and to conserve South Africa's rich biodiversity while ensuring that it plays an important role in improving the life of all the people of South Africa.

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ABBREVIATIONS AND ACRONYMS

ABS	Access and Benefit Sharing
ADU	Animal Demography Unit (of University of Cape Town)
ARC	Agricultural Research Council
BBOP	Business and Biodiversity Offset Program
BEA	Biodiversity in Environmental Assessment
BGIS	Biodiversity GIS
BMP	Biodiversity Management Plan (for species of special concern)
BWI	Biodiversity and Wine Initiative
C.A.P.E.	Cape Action for People and the Environment
CARA	Conservation of Agricultural Resources Act, 43 of 1983
CBD	United Nations Convention on Biological Diversity
CEC	Committee for Environmental Co-ordination
CEPF	Critical Ecosystem Partnership Fund
CHM	Clearing House Mechanism
COP	Conference of the Parties
CPUE	Catch per unit effort
CREW	Custodians of Rare and Endangered Wildflowers
CSIR	Council for Scientific and Industrial Research
DEAT	Department of Environmental Affairs and Tourism
DoA	Department of Agriculture
DPLG	Department of Provincial and Local Government
DST	Department of Science and Technology
DWAF	Department of Water Affairs and Forestry
EEZ	Exclusive Economic Zone
EIA	Environmental Impact Assessment
EIP	Environmental Implementation Plan
EMP	Environmental Management Plan
EPWP	Expanded Public Works Programme
FSC	Forestry Stewardship Council
GEF	Global Environment Facility
GMO	Genetically Modified Organism
GPPC	Global Partnership for Plant Conservation
IAS	Invasive alien species
IDP	Integrated Development Plan
IPAS	Important Plant Areas
LepSoc	Lepidopterists' Society of Africa
MCM	Marine and Coastal Management (Branch of DEAT)
MEA	Multilateral Environmental Agreements
MEC	Member of Executive Council
MRC	Medical Research Council
MoU	Memorandum of Understanding
MPA	Marine Protected Area
NBF	National Biodiversity Framework
NBMRF	National Biodiversity Monitoring and Reporting Framework
NBSAP	National Biodiversity Strategy and Action Plan
NEMA	National Environmental Management Act
NFA	National Forests Act
NFEPA	National Freshwater Ecosystems Priority Areas
NFSD	National Framework for Sustainable Development

NGO	Non Governmental Organisation
NLC	National Land Cover
NPAES	National Protected Area Expansion Strategy
NSBA	National Spatial Biodiversity Assessment
NWA	National Water Act
OBI	Offshore Biodiversity Initiative
ODA	Official Development Assistance
OMPA	Offshore Marine Protected Area
PA	Protected Area
PFM	Participatory Forest Management
PSDF	Provincial Spatial Development Framework
RAF	Resource Allocation Framework
SABAP	Southern African Bird Atlas Project
SABCA	South African Butterfly Conservation Assessment
SABONET	Southern African Botanical Diversity Network
SARCA	South African Reptile Conservation Assessment
SAEON	South African Environmental Observation Network
SANBI	South African National Biodiversity Institute
SANParks	South African National Parks Board
SANSA	South African National Survey of Arachnida
SDF	Spatial Development Framework
SEA	Strategic Environmental Assessment
SKEP	Succulent Karoo Ecosystem Programme
SMME	Small Micro and Medium Enterprises
SO	Strategic Objective (of NBSAP)
SRP	Social Responsibility Programme
STEP	Sub Tropical Thicket Ecosystem Planning
TOPS	Threatened or Protected Species
TFCA	Trans Frontier Conservation Area
UNCCD	United Nations Convention to Combat Desertification
UNDP	United Nations Development Programme
UNFCCC	United Nations Framework Convention on Climate Change
WWF-SA	World Wide Fund for Nature - South Africa

1. OVERVIEW OF STATUS, TRENDS AND THREATS

1.1. Introduction

This chapter provides a brief overall picture of South Africa's biodiversity, and a summary of the status of terrestrial, freshwater, estuarine and marine biodiversity, based mainly on South Africa's first National Spatial Biodiversity Assessment (NSBA) conducted in 2004[1] (Driver *et al.* 2005; see section 2.3.2). The following sections provide an explanation of the principle threats to biodiversity in South Africa and how they affect different types of environments, and a discussion of the implications of biodiversity loss for human wellbeing.

South Africa is in the process of developing a National Biodiversity Monitoring & Reporting Framework. Where possible, indicators from this framework have been included in the chapter. In most cases it is not possible to give time series comparisons as these do not exist at present. As part of the development of the National Biodiversity Monitoring & Reporting Framework, South Africa will collect time series data for many of these indicators, which will be available for future reports.

1.2. South Africa's rich biodiversity

South Africa is a rapidly-growing semi-developed country situated on the southernmost tip of the African continent, spanning the area from latitude 22˚S to 35˚S, and from longitude 17˚E to 33˚E. It has a total land surface area of 1 219 090 km^2 and its Exclusive Economic Zone in the oceans off its coastline covers an area of 1 071 883 km^2. The country is exceptionally rich in biodiversity and also has a high level of socio-cultural diversity.

South Africa's high level of biodiversity has its basis in the country's diverse geology and climate, which is reflected by the high degree of biogeographic zonation and variability of types of terrestrial and aquatic habitats. The terrestrial biodiversity of South Africa can be divided into nine biomes: Albany thicket, desert, forest, fynbos, grassland, Indian Ocean coastal belt, Nama karoo, savanna and succulent Karoo (Mucina & Rutherford 2006; Figure 1-1). Rivers fall within 31 different river ecoregions. Estuaries and coastal marine habitats fall into three biogeographical zones around the coast: the subtropical, warm temperate and cool temperate zones. In addition, the numerous structural types of vegetation, rivers, wetlands, estuaries and marine habitats add considerably to the biodiversity within them.

South Africa occupies only 2% of the world's land surface area and yet is home to 10% of the world's plant species and 7% of the reptile, bird and mammal species. Its oceans are home to about 10 000 species, representing some 16% of the world's marine species (DEAT 2006, Table 1-1).

About half of South Africa's plant species are endemic to the country. The vegetation of the Southern African region has an exceptionally high species-area ratio of 0.0081 species per km^2, compared with a ratio of 0.0044 species per km^2 for Brazil and 0.0041 species per km^2 for Asian countries. The faunal diversity of South Africa is also high relative to the country's surface area (Rouget *et al.* 2004).

The Cape Floral Kingdom is located entirely in South Africa, mostly in the Western Cape Province, and is the smallest, richest and most threatened of the world's six floral kingdoms. It is home to

[1] South Africa's second National Spatial Biodiversity Assessment is underway and will be published in 2010. Results were not yet available for inclusion in this report.

9 000 plant species, or 38% of the country's plant species, of which 1 850 (over 20%) are threatened with extinction (Rouget *et al.* 2004, DEAT 2006).

Table 1-1: **Species richness within South African taxa in relation to the world (adapted from Rouget et al. 2004; additional information from DEAT 2005b and Raimondo et al 2009)**

Taxon	Number of described species in SA	% of the earth's species	% of species endemic to South Africa
Plants	23 456	10	65
Invertebrates	77 500	5.5	70
Amphibians	84	2.1	56
Reptiles	286	4.6	36
Freshwater fish	112	1.3	51
Marine fish	2 150	16	13
Mammals	227	5.8	16
Birds	718	8	6

There are three globally-recognised biodiversity hotspots in South Africa: the Cape Floristic Region; the Succulent Karoo, which is shared with Namibia; and the Maputaland-Pondoland-Albany hotspot, shared with Mozambique and Swaziland (Figure 1-1)

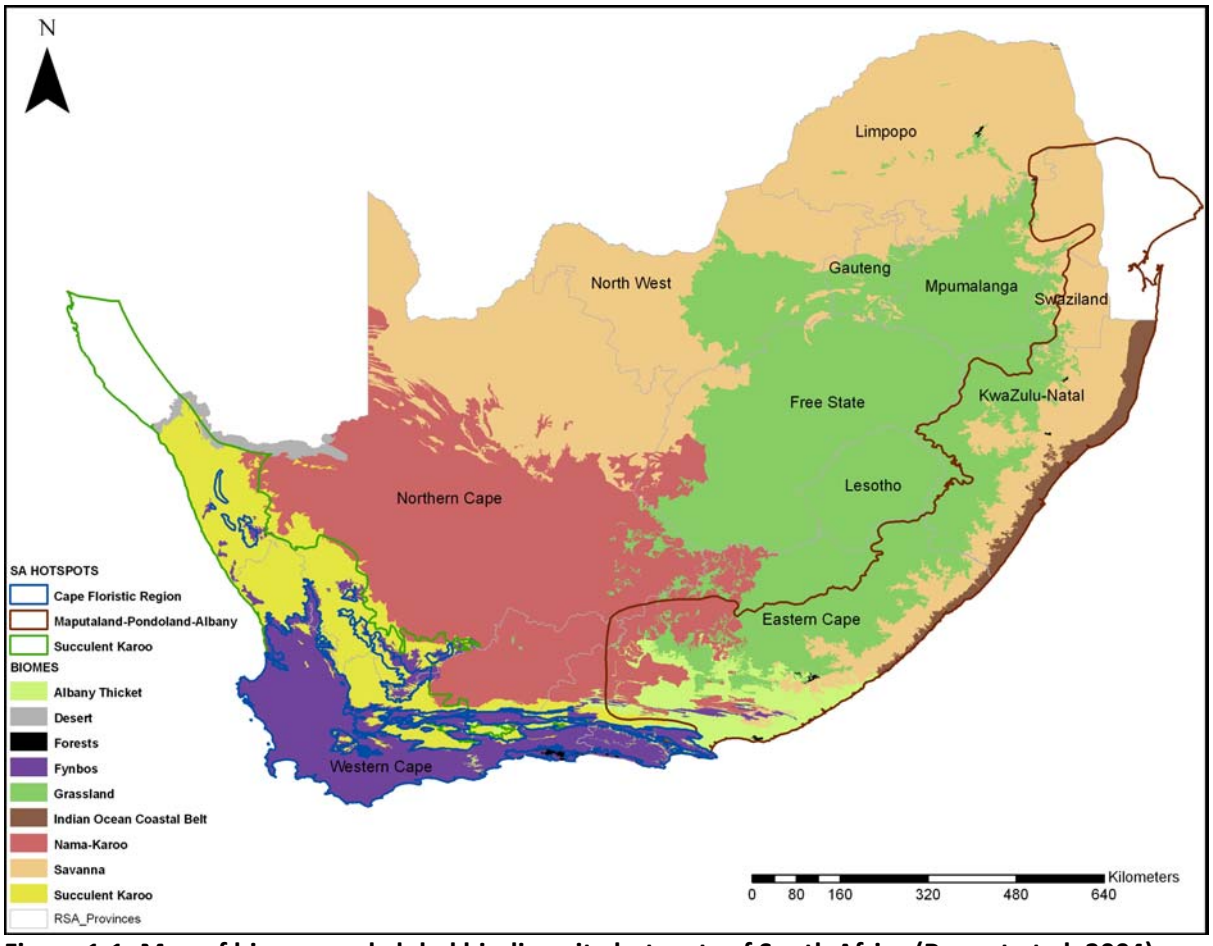


Figure 1-1: Map of biomes and global biodiversity hotspots of South Africa (Rouget et al. 2004)

1.3. The status of South Africa's biodiversity

1.3.1. Status of terrestrial biodiversity

Of the 440 vegetation types of South Africa 5% of them are critically endangered, 12% are endangered and 16% are vulnerable (Rouget *et al.* 2004; see Box 1 for explanation of status categories). The largest proportion of the threatened vegetation types occur in the fynbos biome which is part of the Cape Floristic Region, a global biodiversity hotspot. Figure 1-2 shows the location of the various categories of threatened vegetation types in South Africa (Driver *et al.* 2005).

Box 1: Threatened and Protected Ecosystem categories in the Biodiversity Act

The following categories of ecosystems may be listed in terms of subsection 52(1) of the Biodiversity Act:
(a) **critically endangered** ecosystems, being ecosystems that have undergone severe degradation of ecological structure, function or composition as a result of human intervention and are subject to an extremely high risk of irreversible transformation;
(b) **endangered** ecosystems, being ecosystems that have undergone degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems;
(c) **vulnerable** ecosystems, being ecosystems that have a high risk of undergoing significant degradation of ecological structure, function or composition as a result of human intervention, although they are not critically endangered ecosystems or endangered ecosystems; and
(d) **protected ecosystems**, being ecosystems that are of high conservation value or of high national or provincial importance, although they are not listed in terms of paragraphs *(a)*, *(b)* or *(c)*.

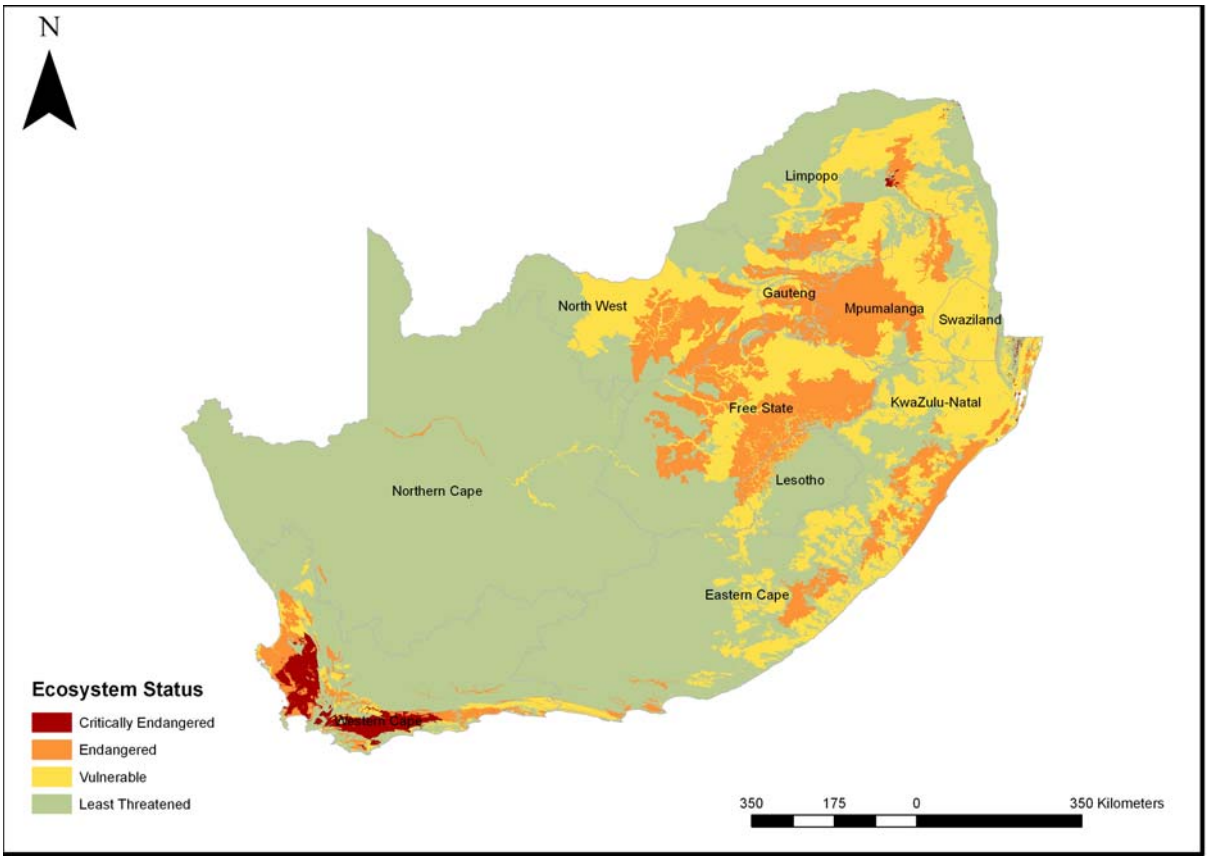


Figure 1-2: Map of ecosystem status of terrestrial ecosystems in South Africa, as assessed in the NSBA 2004 (Rouget et al. 2004)

According to the most recent National Land Cover data (2000), some 86% of the terrestrial surface area remains in a natural state (irrespective of quality). Note that this differs from an earlier estimate (Table 1-2), but this is thought to be mainly due to a lack of consistency in the mapping methods and scales used. Similar problems arise in comparing the area under forest plantations, probably due to the difficulty in correctly identifying dense invasive alien vegetation – the 1994 data for forests are considered inaccurate and the 2000 update more closely represents the real situation. These problems have been recognised and South Africa is working towards having regularly updated land cover maps that are consistent and comparable. Good spatial information on the extent and degree of land degradation is lacking at present.

Table 1-2: Percentage of the country covered by various land cover classes according to 1994 and 2000 National Land Cover maps

Land cover class	% of country according to NLC 1994	% of country according to NLC 2000
Cultivated areas	11.6	10.9
Forestry plantations	7.6	1.4
Industrial areas	0.1	0.1
Mines	0.1	0.2
Natural areas	79.7	86.3
Urban areas	0.9	1.2

Currently, about 6.5% of the country's terrestrial surface area is included in protected areas, composed of 479 Type I protected areas and 471 Type 2 protected areas. Type I protected areas are formally protected areas including national, provincial and municipal protected areas and forest nature reserves. Type 2 protected areas include mountain catchment areas, state forests, defence force property, natural heritage sites, wildlife management areas, private nature reserves, bird sanctuaries and botanical gardens. Few of the protected areas are larger than 100 000 hectares, and most are between 1 000 and 10 000 hectares. The protected area network does not protect all biomes equally (Figure 1-3). The most poorly-protected biomes are the grassland, succulent karoo and Nama karoo biomes (DEAT & SANBI 2008). The protection level for forests includes some State forests which do not strictly qualify as protected areas as they are not formally declared as such.

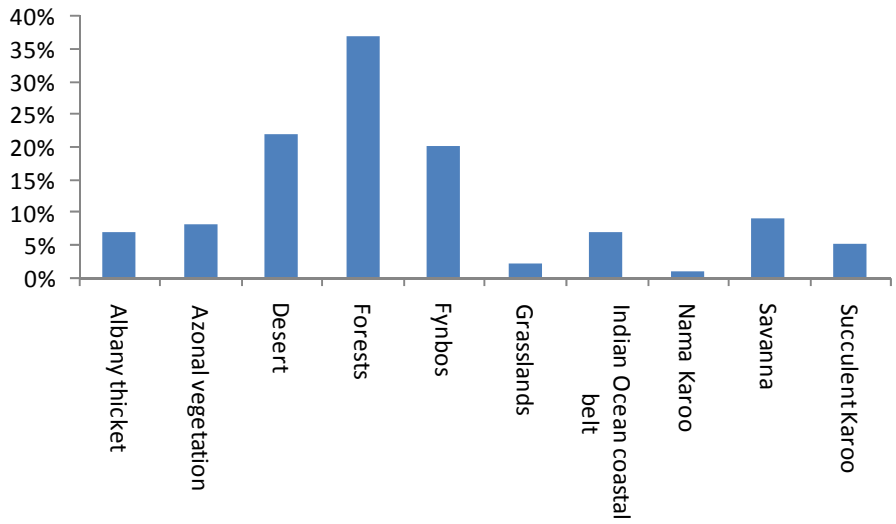


Figure 1-3: Percentage of terrestrial biomes in protected areas (adapted from SANBI & DEAT 2008)

National Red List assessments of the status of South Africa's species indicate that 10% of birds and frogs, 20% of mammals and 13% of plants are threatened.[2] No particular biome in South Africa contains more threatened faunal species than any other. For plants, however, the fynbos biome has a much higher number of threatened species than the other biomes (DEAT 2006).

1.3.2. Freshwater biodiversity status

South Africa's freshwater ecosystems vary tremendously in their distribution, size and perenniality due to the geographic variability in the quantity, season and regularity of rainfall across the country. Of the wide variety of organisms that inhabit South Africa's freshwater ecosystems, only fish have been assessed in terms of their conservation status. Thirty-six percent of the country's freshwater fish are threatened. Although no freshwater fish have gone extinct in the country, many have been eliminated from particular river systems (DEAT 2006).

The condition of main river ecosystems in South Africa was summarised as part of the NSBA (Nel *et al.* 2004; Table 1-3). The assessment showed that only 29% of the country's main rivers were unmodified or largely unmodified. An assessment of smaller tributaries is required, however, before an accurate picture can be presented.

Table 1-3: Percentage of river length of main river ecosystems in each ecological state class (Nel at al. 2004)

Present Ecological State Class	Percentage of main river length
Intact	29%
Moderately modified	45%
Transformed	26%

Some 82% of main river ecosystem types are threatened, with 44% critically endangered, 27% endangered, and 11% vulnerable (Nel *et al.* 2004, Driver *et al.* 2005; Figure 1-4).

An estimated 50% of South Africa's wetlands have been destroyed, but a comprehensive assessment of their conservation status has yet to be done (DEAT 2006). A National Wetland Inventory is in the process of being developed. Ten percent of South Africa's wetlands are fully protected, and a further 8% are partially protected. There is no information on the protection status of 66% of South Africa's wetlands. The remaining 16% are definitely not protected (DEAT 2006). South Africa has 19 Ramsar sites and the 20th and 21st are in the process of being designated.

Protected areas in South Africa have generally not been designed to conserve freshwater biodiversity. Approximately one third of the boundaries of protected areas are defined by rivers, which means that those rivers are not adequately protected. Only 7% of main river ecosystems are protected by statutory protected areas. Rivers are particularly difficult to conserve because they are affected by events occurring upstream from the conserved location and it is difficult to conserve the entire length of a river and its catchment (DEAT 2006).

[2] IUCN criteria are used to determine the threat level for a species – these criteria take into account reduction in population size, geographic range, population size or a quantitative analysis of probability of extinction in the wild over a defined period. A species is "critically endangered" if it is facing an extremely high risk of extinction in the wild (for example, probability of extinction in the wild in the next ten years is at least 50%); "endangered" if it is facing a very high risk of extinction in the wild (for example, probability of extinction in the wild in the next twenty years is at least 20%) and vulnerable if it is facing a high risk of extinction in the wild (for example, probability of extinction in the wild in the next 100 years is at least 10%).

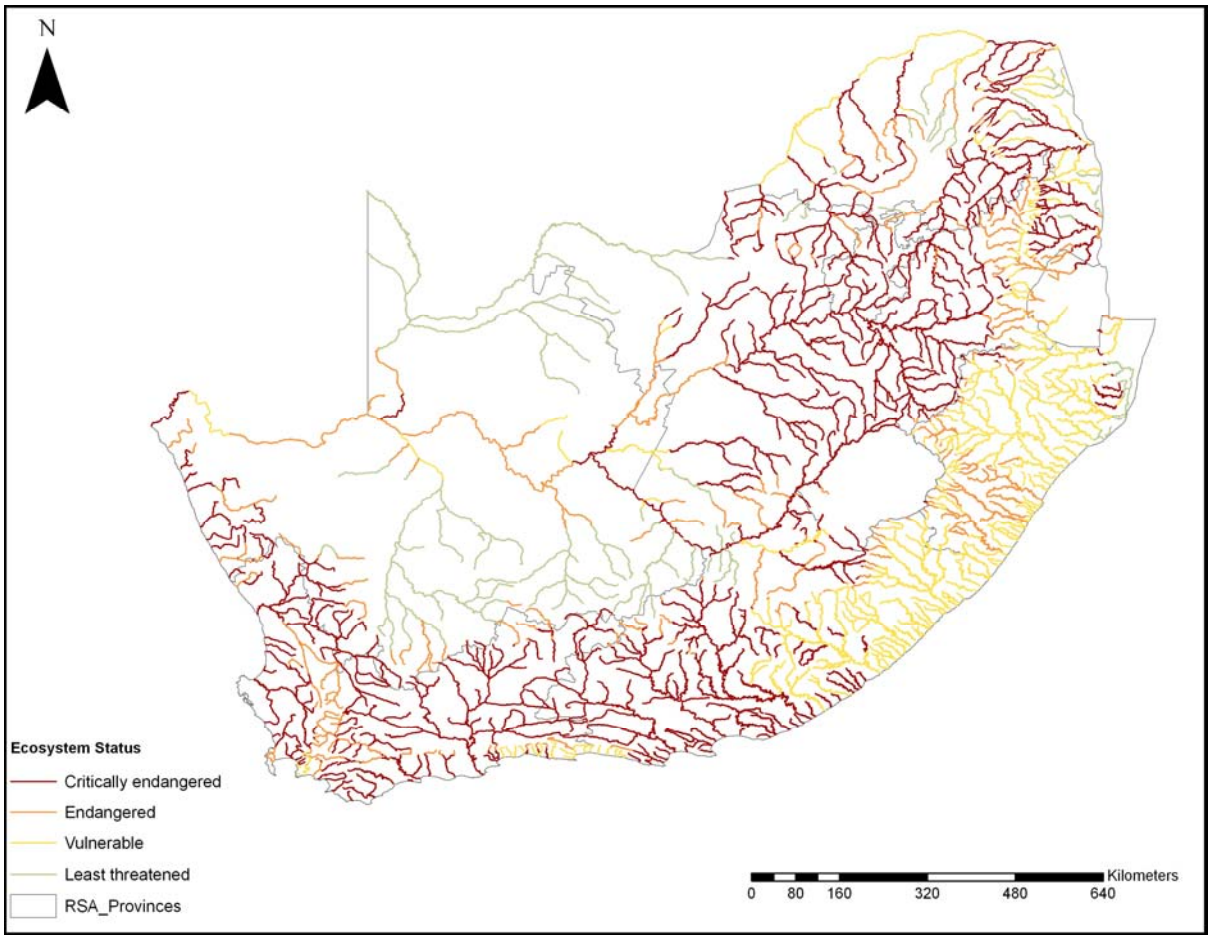


Figure 1-4: Map of ecosystem status of main river ecosystems in South Africa, as assessed in the NSBA 2004 (Nel et al. 2004)

1.3.3. Status of estuarine biodiversity

South Africa has some 259 estuaries which are sparsely distributed along the west coast and increase in density towards the east. Species richness within estuaries increases towards the east (Turpie *et al.* 2004). Estuaries have been classified into four categories according to their health status (Whitfield 2000, updated in Turpie 2004). An estuary was classified as "Excellent" if it was in near pristine condition with negligible human impact, as "Good" if there were no major negative anthropogenic influences on the estuary or catchment, as "Fair" if there is a noticeable degree of human impact on the estuary or catchment and as "Poor" if there is major ecological degradation arising from a combination of anthropogenic influences. Generally, South Africa's estuaries are in a good state of health, with 59% being in good or excellent condition (Table 1-4), but a significant number are in a poor state of health, especially in heavily developed areas such as along the south-western Cape coast, around Port Elizabeth and in KwaZulu-Natal.

Table 1-4: Percentage of estuaries in each ecosystem health class (Turpie 2004)

Ecosystem health class	Percentage of estuaries
Excellent	28%
Good	31%
Fair	25%
Poor	15%

As part of the NSBA 2004, Turpie (2004) assessed the ecosystem status of each type of estuary (river mouth, estuarine bay, estuarine lake, permanently open or temporarily open) in each biogeographical zone (a total of 13 groupings). If an estuary group is critically endangered, it means that there are very few relatively unimpacted examples of that group remaining, with progressively more healthy estuaries remaining for endangered, vulnerable and least threatened respectively. According to this categorisation, almost two-thirds (62%) of estuary groups are endangered or critically endangered (Table 1-5).

Table 1-5: Ecosystem status of estuarine groups as assessed in the NSBA 2004 (Turpie 2004)

Ecosystem Status	Number of estuary groups
Critically Endangered	3 (23%)
Endangered	5 (38%)
Vulnerable	2 (15%)
Least Threatened	3 (23%)

Four species of estuary-dependent fish are categorised by the IUCN Red Data List as critically endangered, namely the doublesash butterflyfish *Chaetdon marleyi*, Knysna seahorse *Hippocampus capensis*, St Lucia mullet *Liza luciae*, and estuarine pipefish *Sygnathus watermeyeri*.

Forty-one estuaries are wholly or partly within protected areas, of which only 14 (5.4%) have a high level of protection; most of these are small in size (DEAT 2006).

1.3.4. Status of marine biodiversity

South Africa's Exclusive Economic Zone covers parts of the Atlantic, Indian and Southern Oceans and includes the areas surrounding the sub-Antarctic islands that form part of the country's territories. The marine environment in South Africa is influenced by the cold Benguela upwelling region on the west coast and the warm Agulhas current along the east coast. South Africa's oceans are home to a wide variety of habitats from kelp forests through coral reefs to rocky shores (Lombard *et al.* 2004).

The NSBA 2004 found that of South Africa's 34 marine biozones, 65% are threatened, with 12% critically endangered, 15% endangered and 38% vulnerable. Most of the critically endangered marine ecosystems occur on the west coast of the country (Figure 1-5; Lombard *et al.* 2004).

Despite extensive threats to the coastal and marine species in southern Africa, no marine species have been recorded as having being driven to extinction in the region. Conservation assessments for marine species have been neglected and assessments for aquatic species are far behind those for terrestrial species. Some 302 marine taxa (including eight mammal species) in South Africa are on the IUCN 2007 Red List, with ten listed as critically endangered.

At least 22 fishery species are threatened (Lombard *et al*. 2004). The South African line fishery was declared in a state of emergency in 2000 with the stock status of several species in poor condition and evidence that ten taxa had collapsed (<20% of breeding stock remaining) and two were

overexploited (<40% breeding stock remaining) (Sink & Lawrence 2008). The abalone fishery has been closed as a result of severe overexploitation. Results of a recent study on the trends in linefish stock status are summarised in Box 2.

Box 2: Trends in linefish stock status (MCM 2009)

Snoek and yellowtail
The catch and Catch per Unit Effort (CPUE) trends for the most important commercial species do not indicate a significant recovery of the linefish resource. These two nomadic shoaling species seem to have experienced a downward trend in the recent years.

Kob and geelbek
The kob catch shows a steady decline over the last two decades. However, there is a positive trend for this species as well as for geelbek in the recent years, as CPUE is starting to increase. However, the current CPUE is still below 20% of the value for the fleet of non-motorised wooden vessels in 1906.

Other species
There is no evidence of a significant recovery of any of the stocks. On the contrary, there are indications that the effort on many inshore species is increasing as a result of increased subsistence fishing activity.

The uncertainty of the catch potential of the reduced Total Allowable Effort (TAE) and the severely depleted state of many resources, coupled with the uncertainty of the stock-recruit relationship, prevent predicting the likely time span for recovery. Due to the life histories of many of the linefishes, it is likely to take many years, even decades, to rebuild the stocks to the target reference points. Emergency measures in the linefish sector will therefore need to remain active for the foreseeable future until stocks reach those reference points.

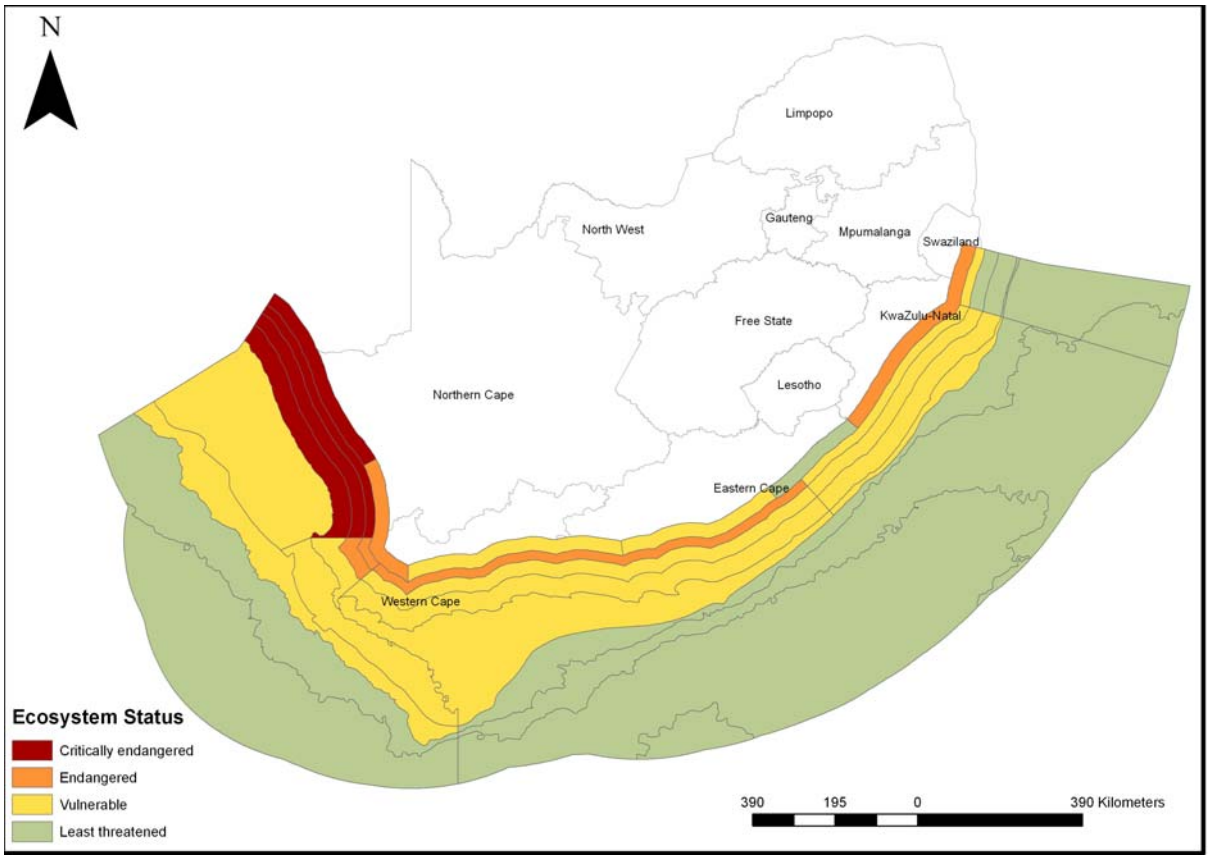


Figure 1-5: Map of ecosystem status of marine biozones in South Africa, as assessed in the NSBA 2004 (Lombard et al. 2004)

The coastline of South Africa extends for approximately 3000 km of which 21.5% is protected by inshore Marine Protected Areas (MPAs). However, only 9.1% of the area of these MPAs is fully protected (that is, classified as no-take zones). Of South Africa's Exclusive Economic Zone (EEZ) 0.4% lies within MPAs, with an even smaller proportion, less than 0.2%, classified as no-take (DEAT & SANBI 2008).

1.4. Threats to biodiversity

1.4.1. Causes of biodiversity loss

Much of South Africa's unique biodiversity is heavily threatened by human activities. The major pressures affecting South African biodiversity are outlined below and summarised in Table 1-6. The threats specific to terrestrial, freshwater, estuarine and marine biodiversity are discussed in more detail in the following sections.

The South African Millennium Ecosystem Assessment highlighted the loss and degradation of natural habitats as the biggest cause of biodiversity loss and decline in ecosystem functioning in terrestrial ecosystems, although habitat loss and degradation is also significant in aquatic and coastal ecosystems (DEAT 2006). Apart from the outright replacement of natural habitat, the other main causes of biodiversity loss, namely flow modification, invasive alien species, over-harvesting, pollution and climate change, may impact either directly on species or indirectly through habitat degradation. Hybridisation and genetically modified organisms (GMOs) also pose a threat to species.

Table 1-6: Relative importance of different types of anthropogenic threats on terrestrial, freshwater, estuarine and marine ecosystems in South Africa

	Terrestrial	Freshwater	Estuarine	Marine
Habitat loss and degradation	XXX	XX	XX	XX
Flow modification	X	XXX	XXX	X
Invasive alien species, hybridisation & GMOs	XXX	XXX	X	XX
Over-harvesting	XX	X	XXX	XXX
Pollution	X	XX	X	X
Climate change	XXX	XXX	XXX	XX

Habitat loss and degradation

Many areas of natural habitat are replaced, often irreversibly, by alternative land uses such as urban development, industrial and mining development, agricultural activities such as clearing land for cultivation of crops (including biofuel crops) or forestry plantations. Aquatic habitats can be completely transformed by canalisation and marine habitats can be destroyed by trawling and other types of development. As areas of habitat are destroyed, the areas available for inhabitation by various species and ecosystem types is reduced and some species or ecosystems may fall below a threshold where they are viable.

Habitat degradation is widespread, affecting terrestrial and aquatic ecosystems, and is discussed further in the sub-sections that follow.

Flow modification

South Africa is a water-scarce country and many of the economic activities in the country are limited by the availability of water. Thus, the country's rivers are heavily utilised and dammed, with more than 60% of this water used for irrigation. This results in an alteration in both the volume of water flowing as well as the seasonality of water flows into rivers, estuaries and eventually the oceans. In some cases flows are also impacted by the discharge of effluents or treated sewage. Many rivers

that used to vary in flow throughout the year now flow evenly throughout the year, and others have times of no or very low flow, which they did not experience previously. The opening and closing of estuary mouths is also affected, thus altering the delicate balance between salt and freshwater inflows into estuaries. Much of the biodiversity in aquatic ecosystems is adapted to certain conditions and regimes of flow and when these are altered the habitats are no longer optimal.

In some cases South Africa water is transferred artificially between catchments (inter-basin transfers) to increase water availability in areas where demand is high. This also alters the natural flow regimes as well as introducing new species to catchments where they did not previously occur, which can have negative effects on species native to the catchment.

Invasive alien species, hybridisation & GMOs

Purposely or accidentally-introduced species and varieties may become invasive, or may result in hybridisation with local species, resulting in the loss of genetic diversity. Where introduced species have an ecological advantage, they spread independently, replacing indigenous vegetation and species, thus causing a loss of biodiversity and affecting the functioning of ecosystems. There are concerns that Genetically Modified Organisms (GMOs) may have similar impacts.

GMOs are organisms that are modified in a laboratory to have characteristics derived from genes of other species. Under South African legislation, GMOs have to be thoroughly tested before they are released as agricultural crops into the open environment. There is a concern that GMOs can have a detrimental effect on biodiversity by cross-pollinating with indigenous species or by being viable in areas that non-GMO crops are not, thus resulting in additional widespread loss of natural habitat. Many GMOs are bred to be resistant to herbicides, which raises the concern that herbicide usage will increase, thus increasing pollution levels. However, these species allow cultivation practices with less tillage thus lowering soil erosion and leaching risks. Some GMOs have in-built resistance to pests, resulting in a lower usage of pesticides which can have a positive impact on biodiversity.

Over-harvesting

A wide variety of South African species play a vital role in our economy and are used for purposes such as medicines, food sources, building materials and exotic ornamental plants or pets. All of these uses involve extraction or harvesting of the species from the environment. If harvesting is not at sustainable levels it can have a detrimental effect on the species, reducing populations faster than they can regenerate naturally. Over-harvesting of marine living resources is the largest threat to the marine environment in South Africa and many highly overexploited species are still consumed on a large scale (Lombard *et al.* 2004). A large but as yet unknown number of species of medicinal plants are also over harvested (DEAT 2006).

Pollution

The discharge of industrial effluents into our water systems as well as the runoff from agricultural lands, domestic and commercial sewage, acid mine drainage and litter enter water systems, bringing chemicals leached from these areas, thereby polluting water systems and having a detrimental effect on biodiversity. High nutrient contents caused by fertilisers or other nutrients reaching aquatic ecosystems result in eutrophication where the system becomes anaerobic and there is not enough oxygen for many species to survive. Many toxic substances also have detrimental effects on biodiversity.

Climate change

The change in climatic conditions being experienced across the globe as a result of the increased concentration of greenhouse gases in the atmosphere also affects biodiversity. Climate change will have a potentially severe impact on South Africa's biodiversity with the projected decline in the

reduction of the area covered by the current biomes of up to 55% in the next 50 years (DEAT 2007a). The largest losses are predicted to occur in the western, central and northern parts of the country. Rainfall and temperature changes could lead to more extinctions as the migration of plants and animals towards the less affected eastern parts may be hindered by the fragmented nature of some landscapes. The functioning of ecosystem services could be compromised (DEAT 2006b), with ecosystem processes that may be affected through changes in biodiversity being community respiration, decomposition, nutrient retention, plant productivity and water retention (DEAT 2007a). The reduction in the number of species can compromise the capacity of ecosystems to adjust in the face of a changing climate while fragmentation of habitats also affects carbon cycling processes and reduces carbon storage (DEAT 2007a). There will be potentially dramatic impacts on aquatic systems with altered freshwater flows into river systems and rising sea levels, and changes in the temperature and alkalinity of aquatic systems may also affect biodiversity (DEAT 2006).

1.4.2. Threats to terrestrial biodiversity

South Africa is a developing country and with many of its economic sectors growing rapidly, resulting in extensive loss of natural habitat. The area under cultivation has trebled in the last 50 years and the area under forestry plantations has increased ten fold (DEAT 2006). Although plantations cover a relatively small percentage of the country, they are located in key catchment areas and have a disproportionately large impact on biodiversity. Urban expansion also threatens natural vegetation, especially in the grassland and fynbos biomes. South Africa's Biofuels Industrial Strategy (Department of Minerals and Energy 2007) focuses strongly on crop-based biofuels (including sugar cane, sugar beet, sunflower, canola and soya beans) and targets the 14% of arable land in South Africa that is currently "under-utilised". Depending on the success with which the Biofuels Industrial Strategy is implemented, it is likely to result in increased loss of natural habitat (with associated release of carbon) as well as increased pressure on freshwater ecosystems.

Habitat degradation threatens substantial parts of the remaining natural area, much of which consists of rangelands. Livestock grazing can be compatible with biodiversity conservation if appropriately managed. However, if the rangeland areas that cover much of the country are allowed to degrade through poor management, they will no longer support the biodiversity they originally sustained.

Habitat loss, habitat degradation and invasive alien species are considered the greatest threat to plant species (Figure 1-6). Terrestrial habitat loss affecting plants is mainly attributed to cultivation and urban and habitat degradation is mainly attributed to overgrazing and fire (Figure 1-7).

Ten million hectares of land, or 8% of the land area in South Africa, is currently infested by about 200 species of invasive alien plants across all biomes and ecosystems.

Many of South Africa's species are threatened by over-harvesting, including some of those harvested for medicinal purposes. An estimated 20 000 tonnes of plant material is traded annually in South Africa. Many of the more popular species are overexploited and their populations are declining rapidly in the wild. Efforts are now underway to increase the commercial cultivation of such species to supplement the supply from wild populations (DEAT 2006).

The South African Country Study on Climate Change identified the biodiversity sector as one of the sectors that would be most heavily affected by climate change. The area suitable for inhabitation by the country's existing terrestrial biomes is expected to be reduced by 40% by 2050, and 44% of plant species and 80% of animal species are expected to undergo shifts in their distribution ranges. These shifts are mainly in an easterly direction and may be impeded by human-made infrastructure or lack of available natural habitat in the newly suitable area (DEAT 2006).

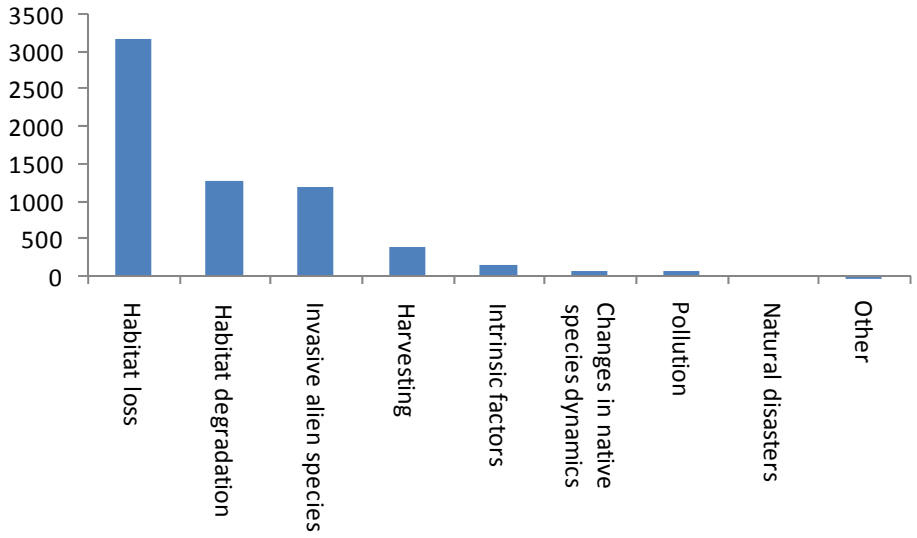


Figure 1-6: Threats affecting Red Data Listed plant species in South Africa

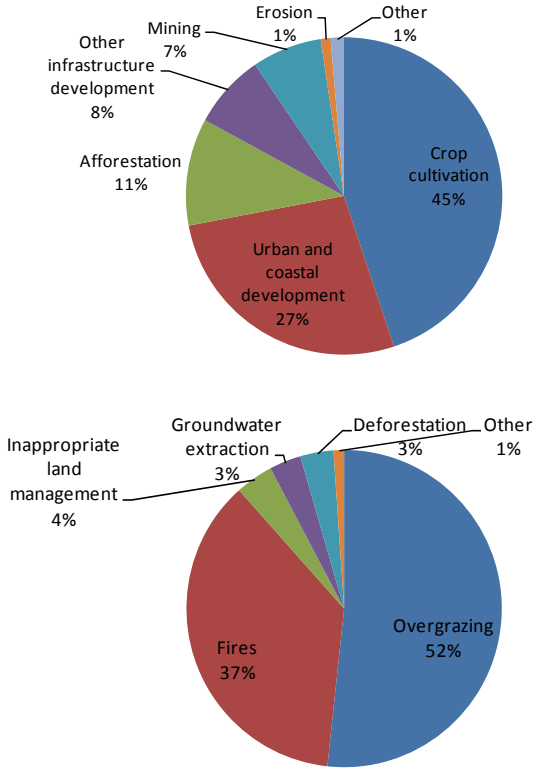


Figure 1-7: Underlying causes of (a) habitat loss and (b) habitat degradation affecting Red Data Listed plant species in South Africa

Since the first GMO was approved in 1998, South Africa now has ten GMOs approved for commercial release, comprised of various cultivars of cotton, maize and soybean exhibiting either insect resistance, herbicide resistance or both. The area planted under GMO crops has increased rapidly in South Africa from 8 000 hectares in 1998 to over 1.4 million hectors in 2006, and more than doubled between 2005 and 2006 (SANBI 2009). This is a major change in the agricultural crops and practices

in the country and so needs to be carefully monitored to assess its impact on the environment as a whole and biodiversity in particular.

1.4.3. Threats to freshwater biodiversity

South Africa's freshwater ecosystems are threatened mainly by flow modification, introduced organisms and pollution. In addition, poor land management leads to soil erosion which, in turn, leads to the siltation of rivers, making the water more turbid and impeding visibility and the penetration of light into aquatic ecosystems.

It is projected that South Africa will be in a water-deficit by 2025, i.e. the demand will exceed the available supply (DEAT 2006). The shortage of water will have negative implications for both development and biodiversity. This is exacerbated by the fact that some 1 400 million m^3 per annum of surface runoff, or about 3% of the national mean runoff, is estimated to be intercepted by invasive alien vegetation (DEAT 2006).

1.4.4. Threats to estuarine biodiversity

Estuarine biodiversity is vulnerable to activities within estuaries as well as catchment activities that affect the quality and quantity of flows into them (Turpie 2004).

Within estuaries, the main threats to biodiversity are habitat loss (due to developments, dredging, marinas, mining and the like), changes in estuary mouth dynamics (artificial or due to changes in inflow) which has a number of ecological effects including increased sedimentation, and the overexploitation of resources. Recreational disturbance is also a significant threat.

Estuaries are also threatened by direct inputs of pollution or from pollution carried into them from the surrounding catchment areas, reducing water quality of the estuary. Habitat degradation (including water quality) commonly occurs as a result of reductions in freshwater inflows due to abstraction, invasive alien plants and stream-flow reducing activities in the catchment. In some cases, habitat degradation is due to *increases* in freshwater inputs due to sewage discharge.

1.4.5. Threats to marine biodiversity

Overexploitation of marine living resources is the major threat to marine biodiversity, with numerous species of marine fish being heavily exploited (Lombard *et al.* 2004; see section 1.3.4). Species that are particularly vulnerable include the more K-selected (longer-lived) linefish species, and valuable invertebrate species such as abalone. Overharvesting of marine resources at the national scale is due to the combined impact of all sectors, namely commercial, recreational and subsistence fishers, including the harvesting of fish and invertebrates for aquariums and shell collections (Lombard *et al.* 2004).

One of the threats resulting from exploitation of marine species is the issue of by-catch and incidental mortality. A serious by-catch issue is the mortality of sea birds in long-line fishing operations (DEAT 2006).

Habitat loss and degradation are also major threats to marine biodiversity, the main causes of which are activities such as trawling and offshore mining. Diamond mining is also a threat to marine biodiversity, especially on the west coast of the country where extensive mining activities occur. Mining has a wide range of impacts on the marine environment including disturbance of the sea floor and pollution including increased turbidity. Development along the coastline is also a serious threat to marine and coastal biodiversity. Thirty percent of South Africa's population lives in the coastal belt, defined as the area 50km inland from the high water mark (Lombard *et al.* 2004).

Climate change poses a serious threat to marine biodiversity. Increased ultraviolet radiation due to depletion of the ozone layer also causes the bleaching of coral reefs (DEAT 2006). Increased sea surface temperature and changes in wind patterns may influence upwelling cycles causing range shifts in marine species, which in turn can affect fisheries.

Open system mariculture (fish raised in enclosures in the sea) can result in eutrophication, pollution, introduction of alien species, introduction of disease to wild fish and a loss of genetic diversity in indigenous fish (Lombard *et al.* 2004).

Pollution from marine activities (such as shipping); the discharge of effluent from the shore and substances brought from rivers that flow into the sea also threaten marine biodiversity.

1.5. Implications of biodiversity loss

The loss and degradation of South Africa's biodiversity has serious implications for its society and economy. Natural ecosystems provide many essential services such as the provision of clean water and air, prevention of soil erosion, pollination of crops, provision of medicinal plants, nutrient cycling, provision of food and shelter and the meeting of spiritual, cultural, aesthetic and recreational needs. Large portions of the country's economy are heavily dependent on biodiversity including the fishing industry, game and livestock ranching, cultivation of indigenous species, commercial and subsistence use of medicinal plants, and ecotourism (DEAT 2006).

The economic value of these ecosystem services is difficult to calculate. Based on about 100 studies the global value of ecosystem services has been estimated to be in the order of US$20 to US$60 trillion (updated to mean 2000 US$ value), similar to the global Gross National Product (GNP). Unconverted, intact and conserved ecosystems can often be more valuable than ecosystems that have been converted for agriculture, forestry plantations or urban development (DEAT 2006).

The total value added to South Africa's economy by provisioning, regulating and cultural ecosystem services in South Africa, excluding the marine environment, is estimated to be in the order of R73 billion per annum, which is in the region of 7% of the country's annual Gross Domestic Product (Turpie *et al.* 2008). This does not include the value generated by the extraction of water and mineral resources. South Africans' willingness to pay to maintain biodiversity for its existence value has previously been estimated to be in the order of R2.6 billion (Turpie 2003).

The majority of South Africans depend directly on natural resources to sustain their livelihoods. For example, it is estimated that over 70% of South Africans use traditional medicinal plants as their primary source of health care. This is a service that is provided free of charge by intact ecosystems, often to people who would not otherwise be able to afford health care. However, the growing medicinal plant industry has resulted in many species becoming overexploited and hence increasingly scarce in the wild. This could have serious implications for the people who use these plants (DEAT 2006). Other important resources include fuelwood, raw materials for construction and crafts, and wild foods. Terrestrial resource use is worth some R3 billion per year, while the total value of resources provided by rivers, wetlands and estuaries is estimated to be worth about R1.05 billion, R784 million and R60 million per year, respectively (Turpie *et al.* 2008). Nevertheless, these values cannot adequately convey the level of dependence on these resources for people's survival.

South Africa's ecosystems provide a range of regulating services that either provide inputs into economic production in other areas, such as the nursery function of estuaries, or that save on

engineering costs or prevent damage costs, such as flow regulation, water purification and carbon sequestration. These services are estimated to be worth in the order of R29 billion per annum (Turpie *et al.* 2008).

South Africa has a booming tourism industry, which makes the second-largest contribution to GDP of all sectors of the economy. Much of the tourism to South Africa is to experience its unique natural beauty and wildlife and thus this industry is heavily dependent on biodiversity and a loss of biodiversity could detrimentally affect the industry (DEAT 2006). Nature-based tourism is estimated to be worth in the order of R21 billion per year (Turpie *et al.* 2008).

Although there are important tradeoffs between conservation and development, it is important to consider the impacts that habitat loss, degradation and loss of species have on the ability of ecosystems to provide these valuable services.

Infestations by invasive alien plants are estimated to utilise 3% of the country's valuable water resources as well as restricting and decreasing the country's agricultural capacity, increasing the intensity of flooding and fires, causing soil erosion that negatively impacts rivers, adding to siltation of dams and estuaries and contributing to poor water quality. Invasive alien species can also be directly responsible for the extinction of indigenous species of plants and animals. In the fynbos biome, invasive alien species are estimated to cause economic losses of about R700 million per year, which translates into a 10% annual loss of economic opportunity (Turpie *et al.* 2003). It is estimated that it would cost R12 billion (R600 million per year for 20 years) to clear all the invasive alien species currently within the country (DEAT 2006).

Poor management of wetlands and rivers and their catchment areas can lead to detrimental effects on water availability and water quality, which, in a water-scarce country, puts further strain on economic growth and the provision of clean water to citizens (DEAT 2006).

Estuaries perform a range of important ecosystem services including the provision of breeding grounds for economically important species of marine fish, and channelling nutrients and sediments from rivers into the sea, contributing to the productivity of marine ecosystems. The value of estuarine fisheries and their contributions to marine fisheries is estimated in the order of R1.9 billion in 2008 Rand (Lamberth & Turpie 2003). The proper management of estuarine ecosystems is thus essential to these portions of the economy (Turpie 2004).

Many people in coastal rural areas depend directly on marine biodiversity for their livelihoods. Such subsistence activities, as well as large commercial fisheries, are dependent on the proper and sustainable management of marine biodiversity. Overexploitation of marine resources reduces their availability to the people who depend on them (Lombard *et al.* 2004).

Last but not least, intact ecosystems are likely to play an important role in providing cost-effective resilience to the impacts of climate change, including buffering human settlements and activities from the impacts of extreme climate events.

The overall socio-economic well-being of the population of South Africa is dependent on the achievement of a balance between development and conservation which involves the sustainable use of its biodiversity. Continued loss of biodiversity and ecosystem health is likely to have dire social and economic consequences. It is thus essential that the socio-economic role of ecosystems is recognised and integrated into all kinds of decision-making.

2. NATIONAL BIODIVERSITY STRATEGIES AND PLANS

2.1. Introduction

This chapter briefly explains the policy and legislative context of biodiversity conservation in South Africa, and then outlines the National Biodiversity Strategy and Action Plan, and the supporting National Spatial Biodiversity Assessment and National Biodiversity Framework (section 2.3). Thereafter, the targets and indicators are described (section 2.4) before progress on implementation of the NBSAP is discussed (section 2.5) and funding arrangements for the biodiversity sector are summarised (section 2.6). The effectiveness of the NBSAP is then assessed (section 2.7). Finally, the chapter outlines certain specific COP 8 matters as required (section 2.8).

2.2. Policy and legislative context

Since the advent of the democratic government in 1994, South Africa has embarked on an extensive process to introduce new policies in line with its democratic constitution. The policies have sought to dismantle the discriminatory laws of the past and create a society based on the principles of equity, non-racialism and non-sexism. The ultimate goal of the changes is to improve the quality of life of all South Africa's people by addressing the poverty and inequality that still prevails in the society. South Africa became a party to the CBD in 1995 and this afforded it the opportunity to incorporate its commitments under the CBD into its policy framework.

South Africa now has a well developed and progressive policy framework for biodiversity management, with the basis laid by the **White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity** (hereafter the White Paper on Biodiversity), published in 1997. Apart from the White Paper on Biodiversity, several other policies have been published in the last ten years for other areas that impact on biodiversity management, such as water, forests, marine and coastal resources and environmental management. The policies are given effect through various pieces of legislation, with a concerted effort having been made to update and harmonise the biodiversity related legislation. This has been done under the overarching framework of the **National Environmental Management Act**, 107 of 1998, (NEMA) which establishes principles for environmental legislation, with separate acts passed to further define and support its objectives in relevant functional areas, such as protected areas, coastal management, air pollution and waste management.

The **National Environmental Management: Biodiversity Act**, 10 of 2004, (hereafter referred to as the Biodiversity Act) is of particular importance with respect to South Africa's commitments under the CBD. This act sought to resolve the fragmented nature of biodiversity related legislation at national and provincial levels by consolidating different laws and giving effect to the principle of co-operative governance, while dealing with the commitments under the CBD. In line with the objectives of the CBD, the Biodiversity Act provides for:

i. The management and conservation of biodiversity in South Africa and the components of such biodiversity
ii. The use of indigenous biological resources in a sustainable manner
iii. The fair and equitable sharing amongst stakeholders of the benefits arising from bioprospecting involving indigenous biodiversity.

The Biodiversity Act established SANBI as a public entity falling under DEAT, with the mandate to play a leading role in South Africa's national commitment to biodiversity management. In partnership with DEAT and the biodiversity sector, SANBI is tasked to lead the biodiversity research agenda, provide knowledge and information, give policy support and advice, manage botanical gardens as 'windows' to our biodiversity for leisure, enjoyment, spiritual upliftment and education, and engage in ecosystem restoration and rehabilitation programmes and best-practice models to manage biodiversity better.

The **National Environmental Management: Protected Areas Act**, 57 of 2003, (hereafter referred to as the Protected Areas Act) provides for the protection and conservation of ecologically viable areas representative of South Africa's biodiversity and natural land and seascapes. It provides for the declaration and management of protected areas, as well as for co-operative governance in such declaration and management. The act seeks to effect a national system of protected areas in South Africa as part of a strategy to manage and conserve its biodiversity and provide a representative network of protected areas on state, private and communal land. It also promotes the sustainable utilisation of protected areas for the benefit of people in a manner that preserves the ecological character of the areas and promotes the participation of local communities in the management of protected areas where appropriate.

Marine resources are primarily protected under the **Marine Living Resources Act**, 18 of 1998, under which Marine Protected Areas are declared.

2.3. South Africa's National Biodiversity Strategy and Action Plan

2.3.1. The NSBA, NBSAP and NBF

While the initial focus was on getting the policies and legislation in place, South Africa has also developed strategies and plans that support the policies and legislation for biodiversity management. The **National Spatial Biodiversity Assessment** (NSBA), completed in 2004, provides a spatial picture of the location of threatened and under-protected ecosystems. This informed the **National Biodiversity Strategy and Action Plan** (NBSAP), which was finalised in 2005 after comprehensive stakeholder participation, and sets out a comprehensive long-term strategy for the conservation and sustainable use of South Africa's biodiversity. The **National Biodiversity Framework** (NBF) distils the thematic and spatial priority actions from the NBSAP and NSBA for the five year period 2008 to 2013. The relationship between the NBSAP, NSBA and NBF is shown in Figure 2-1. Each of these documents is described in more detail below.

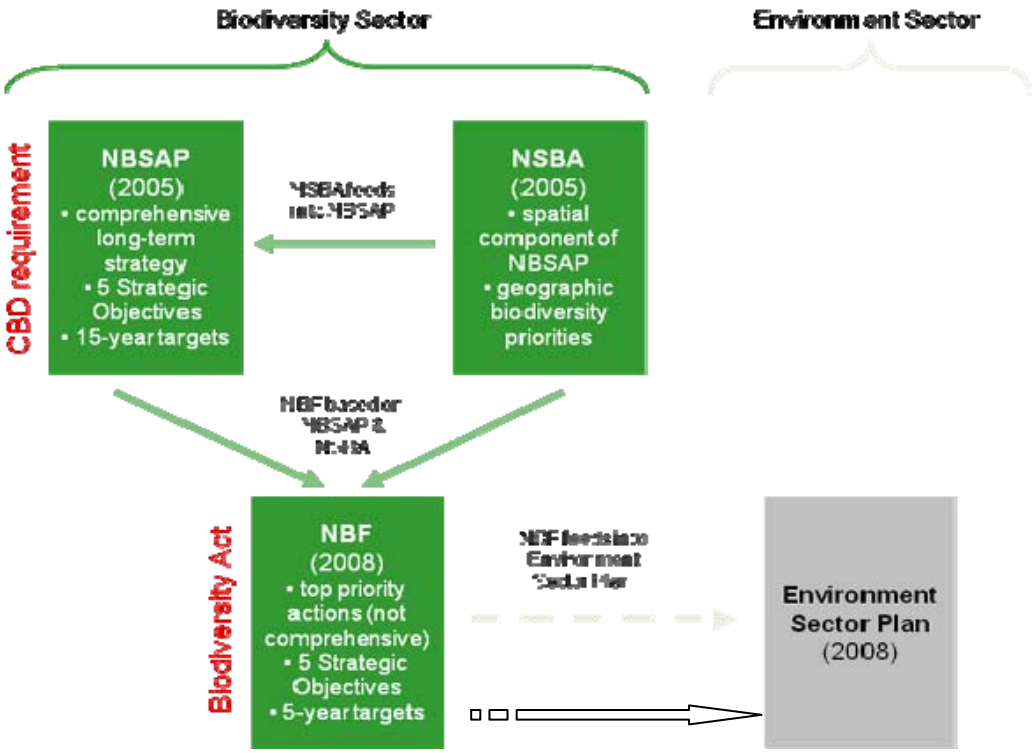


Figure 2-1: **Relationship between the NBSAP, NSBA and NBF**

2.3.2. National Spatial Biodiversity Assessment

South Africa has recognised the importance of **spatial biodiversity planning** to identify biodiversity priority areas as a basis for directing conservation efforts in the country. The first comprehensive national spatial assessment of the status of biodiversity at the ecosystem level was the *National Spatial Biodiversity Assessment (NSBA) 2004* (Driver *et al.* 2005). The NSBA used systematic biodiversity planning[3] techniques to determine the status of ecosystems and identify national priorities for conservation action. It dealt with terrestrial, river, estuarine and marine environments. The underlying principles of the NSBA planning exercise are representation (the need to conserve a representative sample of biodiversity patterns, including ecosystems, habitats and species) and persistence (the need to conserve ecological and evolutionary processes that allow biodiversity to persist over time). The NSBA provides a spatial picture of the location of South Africa's threatened and under-protected ecosystems and focuses attention on geographic priority areas for biodiversity conservation. The next NSBA is underway and will be finalised during 2010. The NSBA is important as the spatial data feeds into other planning strategies, such as the NBSAP, the National Biodiversity Framework (NBF) and the National Protected Areas Expansion Strategy (NPAES) (see section 2.5.2). In addition, most provinces have completed or are undertaking provincial spatial biodiversity plans, which complement the NSBA, identifying geographic biodiversity priority areas at a finer scale.

2.3.3. National Biodiversity Strategy and Action Plan

South Africa published its *National Biodiversity Strategy and Action Plan* (NBSAP) in 2005 (DEAT 2005a). The NBSAP sets out a framework and plan of action for the conservation and sustainable use

[3] Systematic biodiversity planning, also known as systematic conservation planning, is the standard approach to biodiversity planning in South Africa and increasingly elsewhere in the world. It represents best available science for determining spatial biodiversity priorities. For background on the principles and methods of systematic biodiversity planning see Driver et al (2003).

of South Africa's biological diversity and the equitable sharing of benefits from its use. It is supported by a country study (DEAT 2005b) that was based on a rapid assessment of the country's biodiversity, socio-economic and political context.

The NBSAP sets out a comprehensive long-term strategy for the conservation and sustainable use of South Africa's biodiversity, including fifteen year targets. The overall 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. Five strategic objectives support the attainment of this goal, and for each strategic objective the NBSAP identifies outcomes, activities, targets and indicators (Box 3). The goal, strategic objectives and outcomes in large measure respond to the South Africa's obligations under the CBD.

An assessment of progress in implementing the NBSAP is provided in section 2.5 while the effectiveness of the NBSAP is assessed in section 2.7.

Box 3: Strategic Objectives and Outcomes of the NBSAP

Strategic Objective 1

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

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
1.2 Biodiversity considerations are integrated into macro-economic, trade, industrial and fiscal policy
1.3 Biodiversity considerations are integrated into resource management policy and legislation
1.4 A national biodiversity planning and assessment framework informs all decisions regarding land and resource use and spatial development

Strategic Objective 2

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

Outcomes

2.1 The biodiversity sector is transformed and representative of South Africa
2.2 Co-operative governance at all levels results in improved biodiversity management
2.3 Institutions with biodiversity-related responsibilities are effective, efficient and adequately capacitated
2.4 Financial resources for biodiversity management are adequate, and effectively and efficiently used
2.5 Information management systems, research priorities and monitoring and evaluation frameworks are in place and effectively supporting biodiversity management
2.6 A comprehensive and proactive national communication, awareness raising and advocacy strategy reaches targeted sectors and facilitates conservation and wise use of biodiversity
2.7 Proactive engagement and co-operation with the international community enhances conservation and sustainable use of shared resources and globally important biodiversity in South Africa

Strategic Objective 3

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

Outcomes

3.1 National initiatives to manage terrestrial and aquatic ecosystems are co-ordinated, developed and implemented with full stakeholder participation to contribute to the sustainable socio-economic development
3.2 Key production sectors and industries integrate biodiversity into their products and services
3.3 A multi-agency national programme deals with the full suite of impacts posed by invasive species across the landscape and seascape
3.4 An integrated national programme facilitates adaptation to the predicted impacts of climate change on biodiversity across the landscape and seascape
3.5 Effective management and control measures to minimise the potential risks to biodiversity posed by Genetically Modified Organisms (GMOs)

3.6 Effective waste management and pollution control measures limit the impacts of pollution on biodiversity management
3.7 Research and monitoring programmes support integrated management of terrestrial and aquatic ecosystems

Strategic objective 4
Human development and well-being is enhanced through the **sustainable use** of biological resources and equitable sharing of benefits
Outcomes
4.1 An equitable access, rights and responsibilities regime promotes sustainable use of biological resources
4.2 Partnerships between government, the private sector, organised civil society and communities encourage entrepreneurship, innovation, investment and action at local level
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
4.4 Use of biological resources is well managed to maximise sustainable benefits

Strategic Objective 5
A **network of protected areas and conservation areas**[4] conserves a representative sample of biodiversity and maintains key ecological processes across the landscape and seascape
Outcomes
5.1 Biodiversity priority areas identified in the NSBA are refined in provincial, regional and local systematic biodiversity 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
5.3 Biodiversity is effectively managed in key ecological and high priority fragments of natural habitat across the landscape and seascape
5.4 Management plans for species of special concern ensure their long term survival in the wild
5.5 Research and monitoring programmes support the establishment and effective management of protected areas and conservation areas

2.3.4. National Biodiversity Framework

Chapter 3 of the Biodiversity Act requires that a National Biodiversity Framework (NBF) be developed and updated every five years. A draft NBF was gazetted for public comment during 2007 (DEAT 2007a). Based on comments received, it has been revised and approved in its final form. The final approved NBF will be gazetted shortly.

The purpose of the NBF is to provide a framework to co-ordinate and align the efforts of the many organisations and individuals involved in conserving and managing South Africa's biodiversity in support of sustainable development. It aims to focus attention on the most urgent strategies and actions required for conserving and managing biodiversity and to identify the roles and responsibilities of key stakeholders. The NBF builds on both the NSBA and the NBSAP and is informed by these documents.

The NBF addresses the relationship between conservation and development, identifying that the challenge is not whether development takes place, but where and how development takes place. It recognises that sustainable use and conservation of biodiversity is a multi-sectoral effort that

[4] The NBSAP originally used the term "conservation areas" as an umbrella term referring both to formal protected areas and to informal conservation areas. However, in the development of the National Protected Area Expansion Strategy (see 2.5.2) the decision was made to use the term "protected areas" to refer to formal protected areas recognised in terms of the Protected Areas Act, and the term "conservation areas" to refer to areas that receive some level of informal protection but are not recognised in terms of the Protected Areas Act. This report uses the terms "protected areas" and "conservation areas" in the same way they are used in the National Protected Area Expansion Strategy.

requires co-ordination and alignment between many different organisations and individuals both within and outside of government. The biodiversity sector is developing tools that support and streamline environmental decision-making to ensure that development is appropriate, with the bioregional plans provided for in the Biodiversity Act being key tools that identify critical biodiversity areas, including ecological corridors and important catchments, and give land-use planning and decision-making guidelines.

The NBF identifies a set of 33 Priority Actions (Box 4) which provide an agreed set of priorities to guide the work of the biodiversity sector for the five years to 2013. These priority actions are aligned to the five strategic objectives of NBSAP. The NBF will be reviewed every five years to review progress and priorities and realign efforts.

Box 4: Priority Actions in the National Biodiversity Framework (NBF) towards the Strategic Objectives of the NBSAP

Strategic Objective 1

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

Priority Actions

1. Make the case for the value of biodiversity as the corner stone of sustainable development
2. Integrate biodiversity considerations into fiscal policy through environmental fiscal reform
3. Integrate biodiversity considerations in land-use planning and decision-making, by developing tools for supporting and streamlining environmental decision-making
4. Finalise the regulatory framework for the prevention, containment and eradication of invasive alien species
5. Strengthen the regulatory framework for species of special concern
6. Finalise the regulatory framework for bioprospecting, access and benefit sharing

Strategic Objective 2

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

Priority Actions

7. Establish and implement a human capital development strategy for the biodiversity sector to address transformation and scarce skills
8. Fill key biodiversity information gaps
9. Improve biodiversity information management and access
10. Establish and implement a national biodiversity research strategy
11. Establish and implement a national monitoring and reporting framework for biodiversity
12. Establish a national programme to build the capacity of municipalities to include biodiversity opportunities and constraints in their planning and operations
13. Establish pilot projects to explore mechanisms for integrated natural resource management at the district level
14. Support the development and strengthening of biome and ecosystem programmes

Strategic Objective 3

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

Priority Actions

15. Develop and implement an integrated programme for ecosystem adaptation to climate change, with an emphasis on ecosystems vulnerable to climate change impacts
16. Develop provincial spatial biodiversity plans in additional provinces
17. Publish bioregional plans in terms of the Biodiversity Act
18. List threatened or protected ecosystems in terms of the Biodiversity Act
19. Develop Biodiversity Management Plans for species of special concern and threatened ecosystems
20. Work with key production sectors to minimise loss and degradation of natural habitat in threatened ecosystems and critical biodiversity areas

21. Implement the IAS regulations
22. Implement the cross-sector policy objectives for conservation of inland water biodiversity
23. Incorporate biodiversity conservation objectives in the work of Catchment Management Agencies
24. Develop and implement effective measures for management and control of activities relating to Genetically Modified Organisms in order to manage their impact on the environment

Strategic objective 4

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

Priority Actions

25. Address illegal and unregulated fishing and seafood trade, especially of line fish and abalone
26. Develop an implementation strategy for bioprospecting, access and benefit sharing regulations
27. Facilitate the development of the natural products sector
28. Improve knowledge of sustainable extractive use of terrestrial resources

Strategic Objective 5

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

Priority Actions

29. Finalise the twenty-year National Protected Area Expansion Strategy, underpinned by national biodiversity targets
30. Implement the National Protected Area Expansion Strategy
31. Establish and strengthen provincial stewardship programmes
32. Strengthen programmes that support the informal conservation area system
33. Develop and implement a National Botanical Gardens expansion strategy.

Regional Co-operation

1. Strengthen and improve the development of integrated management and tourism plans of the TFCAs and transboundary World Heritage Sites
2. Develop and implement appropriate incentives for biodiversity conservation and its sustainable use in co-operation with our neighbouring countries
3. Develop, implement and strengthen programmes for international scientific collaboration, sharing of information and technology transfer
4. Develop and implement a co-ordinated regional programme to increase awareness, knowledge and appreciation of biological resources at various levels
5. Strengthen the research and development capacity of the protected area system

2.4. Targets and indicators

SANBI is required under the Biodiversity Act to monitor and report on the status of South Africa's biodiversity to the Minister of Environmental Affairs and Tourism. To meet this legislated mandate SANBI is in the process of finalising a **National Biodiversity Monitoring and Reporting Framework** (NBMRF). Development of this framework was initiated in 2006 with a national stakeholder workshop. Further workshops were held during 2007 to consider in more detail the development of indicators for monitoring status and trends in species, freshwater, marine and estuarine biodiversity. The development of the framework is being guided by South Africa's commitments under the CBD, including the 2010 targets, SANBI's legal mandate and its obligations under the Biodiversity Act and the NBSAP strategic objectives and outcomes. While the NBMRF will measure the overall extent and effectiveness of South Africa's strategies and actions on the status of its biodiversity, it is not intended to be a monitoring tool for the effectiveness of the NBSAP implementation and will thus not explicitly monitor the outcomes of the NBSAP *per se*.

Progress on the development of the NBMRF is that a framework, based on the "pressure, state and response" model commonly used for state of environment reporting, has been accepted as the basis

for the development of a set of headline indicators (Figure 2-2). Progress has been made with data collection and calculation for certain indicators, including the amount of natural habitat lost, number of invasive species, extent and degree of infestation by invasive species and extent to which terrestrial ecosystems are intact. Statistics were also collected for the number of GMOs approved for commercial release and the area planted under GMO crops.

There are inherent difficulties in establishing operational indicators for biodiversity due to its complex and multi-dimensional nature which can be defined in terms of composition, structure and function at various scales (Scholes & Biggs 2005). Accordingly, the scope of the NBMRF is very wide, covering issues as diverse as marine habitat loss, area planted under terrestrial GMO crops and the effects of climate change. In order to integrate and correctly analyse much of the data, a detailed understanding of the specific area under consideration is required.

In addition, the NBMRF aims to track the status of biodiversity over time. As such, it requires data that are comparable over a number of years. Although there is a vast body of data available on various aspects of biodiversity in the country, many of these data sets are "once-off" studies, often covering only a portion of the country. It has been a challenge to find ways of integrating different data sets and making them comparable to produce time series statistics.

The lack of an established monitoring system means that is not possible in many cases to provide quantitative information and trends to support information and conclusions in this Fourth National Report to the CBD. Wherever possible, information provided in the report is supported by the best available data. It is anticipated that the NBMRF will have been finalised and additional relevant indicators developed for inclusion in the next National Report to the CBD.

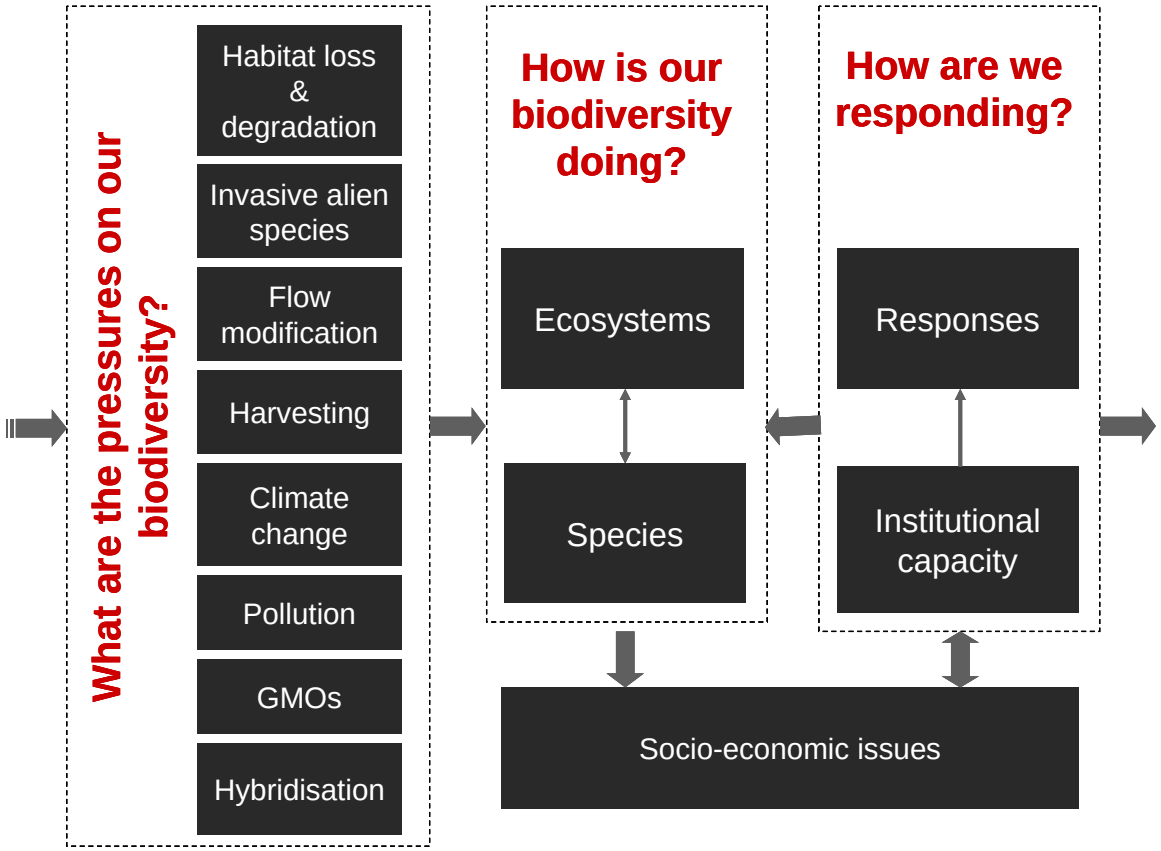


Figure 2-2: Draft structure of national biodiversity monitoring and reporting framework

2.5. Progress on implementation of NBSAP

2.5.1. Overview

Although the NBSAP contains an implementation plan, including outcomes, targets and indicators as well as activities to achieve the outcomes, there is no formal monitoring and reporting system in place to measure the extent to which the activities have been performed or their contribution towards achieving the outcomes and targets. What seems clear is that significant progress has been made in certain areas, while challenges in other areas are hampering the achievement of targets.

This section first describes some of the key achievements made in implementation of the NBSAP, including the development of the National Protected Areas Expansion Strategy (NPAES) and the National Freshwater Ecosystem Priority Areas (NFEPA) project (sections 2.5.2 and 2.5.3). Progress in implementing the CBD Programme of Work for Forests is highlighted in Box 11. Thereafter, the progress and challenges in implementing the NBSAP are set out for each of the five NBSAP Strategic Objectives (SOs) in tabular form below. These tables reflect the 15-year NBSAP targets with the progress and challenges described for each Outcome.

2.5.2. National Protected Area Expansion Strategy

South Africa's protected area network currently falls short of sustaining biodiversity and ecological processes and is behind in meeting CBD targets for protected areas. Some 6.5% of they country's terrestrial area is under formal protection, and while 21.5% of the coastline is protected by Marine Protected Areas (MPAs), only 9.1% of the coastline is fully protected in "no-take" zones (DEAT & SANBI 2008). In this context, a National Protected Area Expansion Strategy (NPAES) has been developed (DEAT & SANBI 2008) with the overall goal of achieving cost effective protected area expansion for ecological sustainability and increased resilience to climate change. The NPAES is a 20-year strategy but will be reviewed every five years. Targets are set for protected area expansion, with maps of the most important areas to be protected, and recommendations are made on the mechanisms to achieve the expansion.

The NPAES recognises the role that protected areas can play in supporting land reform, rural livelihoods and local economic development. This includes diversification of rural livelihood options, especially in agriculturally marginal areas, through community participation in activities such as ecotourism. In addition, the strategy seeks to improve the representivity of ecosystems and species in the protected area network by addressing the current bias of the network towards terrestrial areas, especially indigenous forests, mountain fynbos and lowveld savanna, by including river ecosystems, wetlands, estuaries and marine ecosystems.

The NPAES notes that intact ecosystems can increase resilience to the impacts of climate change by allowing ecosystems and species to adapt as naturally as possible to the changes and by buffering human settlements and activities from the impacts of extreme climate events. A sufficient protected area network supports the persistence of biodiversity in the broader landscape and safeguards the long-term provision of ecosystem goods and services, even in the face of stresses such as climate change. An implication of this is that the protected area expansion strategy should prioritise protection of connected landscapes. Protected areas need to be expanded to include altitudinal gradients and topographic range, intact water corridors, coastal dune cordons and a range of micro-habitats. The ability of species and systems to adapt to climate change will depend on landscapes that are sufficiently connected to allow species to move. These factors have been taken into account in identifying important geographical areas for protected area expansion.

Ecosystem-specific biodiversity thresholds, representing tipping points beyond which irreversible loss of ecosystem functioning is likely to occur, are used as a basis for setting protected area targets.

Another important feature is that the NPAES considers how the areas in the protected area network are distributed across different ecosystems, rather than focusing simply on the number of hectares under protection. The NPAES sets a 20-year target for each of the 440 vegetation types in each of the nine biomes, resulting in a protected area target of 12% of South Africa's land area. These ecosystem-level targets are reflected in 20-year targets, with the current protection level and additions required over both the 20-year period and in the next five years to meet the targets (Table 2-1). Although protected area targets were not set for freshwater ecosystems, biodiversity thresholds for river ecosystems were used to determine the priority areas for land-based protected area expansion. No explicit targets have been set for estuaries, but two sub-national conservation plans for estuaries cover 80% of the country's estuaries and provide targets and priorities for estuarine protection. South Africa's mainland Exclusive Economic Zone is divided into five inshore marine bioregions and four offshore marine bioregions and targets are set at these levels.

To prioritise the geographic areas for inclusion in the protected area system, the factors of importance and urgency are considered. An area is important if it contributes to meeting biodiversity thresholds for terrestrial or freshwater ecosystems, maintaining ecological processes, or climate change resilience. Using systematic biodiversity planning techniques, 42 focus areas for land-based protected area expansion were identified (see Figure 2-3). Urgency is determined by the extent to which spatial options for meeting protected area targets exist, which is linked to the degree of competing land or resource uses in an area, such as cultivation, mining or urban development. The importance and urgency factors are combined in a matrix, with the conclusion being that a balanced expansion strategy should be applied between areas that have high importance / high urgency and high importance / low urgency.

Table 2-1: Summary of land-based and marine protected area targets and areas required to meet targets (DEAT & SANBI 2008)

	20-year target	Current protection level*	Addition needed to meet 20-year target	Addition needed in next 5 years
Land-based	12%	6.5% (7.9m ha)	8.8% (10.8m ha)	2.2% (2.7m ha)
Marine inshore**	No-take: 15%	No-take: 9.1% (334km) ***	No-take: 6% (234km)	No-take: 1.5% (56km)
	Total: 25%	Total: 21.5% (785km)	Total: 9.6% (353km)	Total: 2.4% (88km)
Marine offshore: mainland EEZ	No-take: 15%	No-take: 0.16% (1 671 km^2)	No-take: 14.8% (159 111 km^2)	No-take: 3.7% (39 887 km^2)
	Total: 20%	Total: 0.4% (4 172 km^2)	Total: 19.6% (210 205 km^2)	Total: 4.9% (52 551 km^2)
Marine offshore: Prince Edward Islands EEZ	No-take: 15%	No-take: 0% ****	No-take: 15% (70 032 km^2)	No-take: 3.8% (17 508 km^2)
	Total: 20%	Total: 0%	Total: 20% (93 376 km^2)	Total: 5% (23 344 km^2)

Notes:

* An area is considered protected if it falls within a protected area recognised in the Protected Areas Act.

** Inshore marine targets are measured in kilometres of coastline because of the varying distances which inshore MPAs extend from the coastline. Inshore is considered to mean from the high water mark to the 30m depth contour. All inshore MPAs extend at least this far. In future a more accurate area-based measure for inshore MPA targets will be used, but this is not possible with current data.

*** The protection levels reflected in this table exclude the Stilbaai MPA that was declared in 2008, with more than 50% of this MPA being "no-take"

**** Fishing has been excluded from a 12 nautical mile exclusion zone immediately around the islands (3% of the Prince Edward Islands EEZ) but the area has not been promulgated as an MPA. The Prince Edward Island area will be gazetted for formal consideration as an MPA during 2009.

Mechanisms identified in the NPAES for achieving PA expansion are:

- Acquisition of land, with an estimate that the cost of purchasing all the land needed to meet the 20-year protected area targets would be in the order of R23 billion;
- Contract agreements, in which private/communal owners retain ownership but enter into a contract with a conservation agency to manage the land as a formal protected area. The Protected Areas Act facilitates such arrangements which are being actively pursued through provincial stewardship programmes;
- Declaration of public or state land as protected areas, although it is noted that this has limited applicability.

The NPAES notes that mechanisms for expanding MPAs are more complex and require further research. However, following through with the MPAs already formally proposed and others at various stages of the process towards declaration will allow most of the five-year targets to be met.

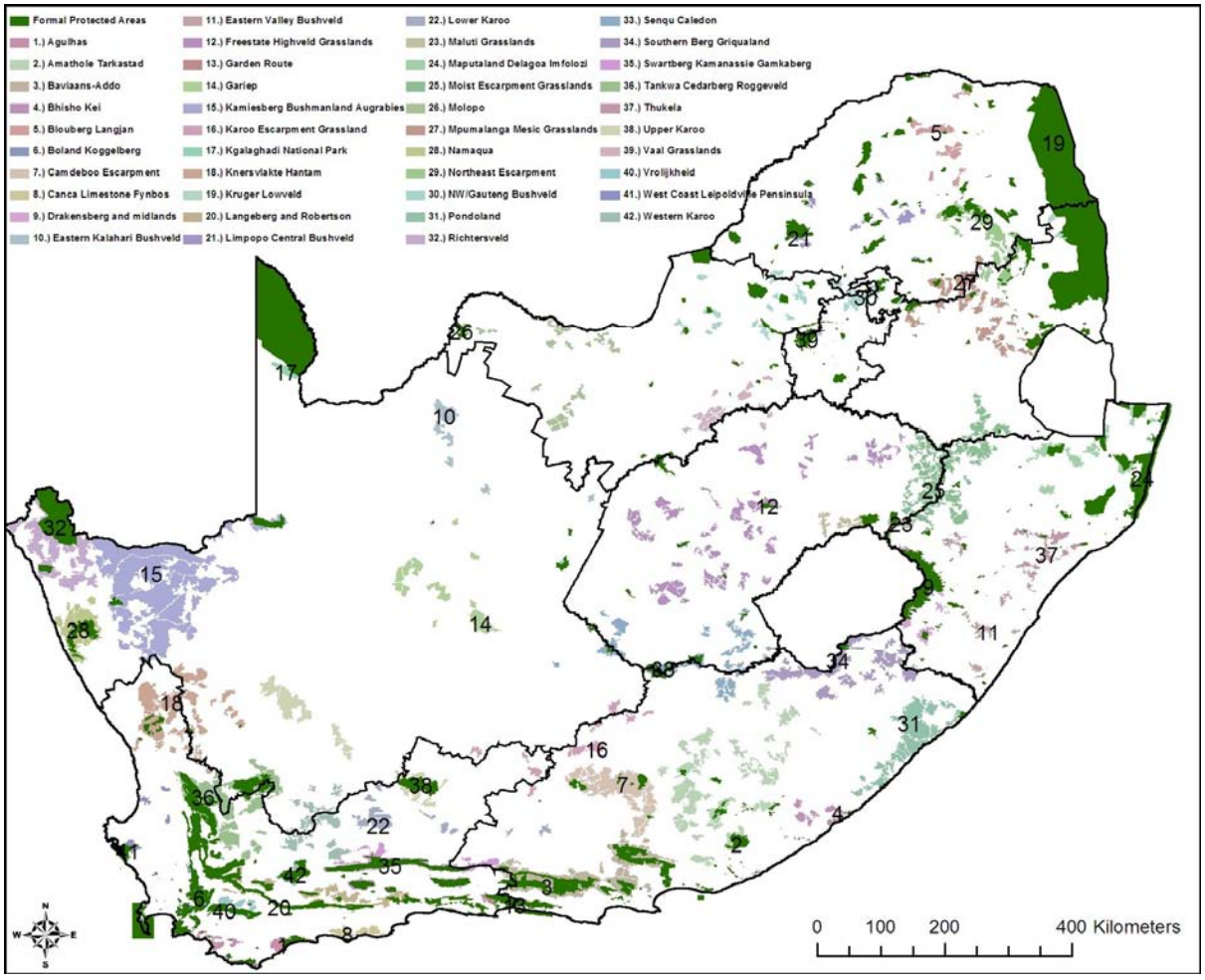


Figure 2-3: Focus areas for land-based protected area expansion (large, intact and unfragmented areas of high importance, suitable for the creation or expansion of large protected areas)

The NPAES also addresses financial tools for protected area expansion and notes that several sources of finance have a role to play. These sources are funding from National Treasury, donor funding and revenues earned from protected areas. Biodiversity-related fiscal reform to encourage

investment and expenditure by private landowners through contract agreements can also support expansion of the network. A new set of fiscal incentives which come into effect in March 2009 will provide a significant boost to protected area expansion by making defined conservation management costs tax deductible for landowners who have entered into a contract agreement (see section 3.2.8). Additional biodiversity-related fiscal reform options being explored. Other innovative mechanisms such as a revolving land fund and payments for ecosystem services also need to be considered.

The NPAES has recently been approved, and will be published during 2009.

2.5.3. National Freshwater Ecosystem Priority Areas

As noted in Chapter 1, South Africa is a water-stressed, water-scarce country. Freshwater ecosystems provide an important resource for economic development, socio-economic wellbeing and for ecosystem functioning, but as noted in section 1.3.2, South Africa's freshwater systems are in a poor condition with 82% of main river ecosystems threatened. Freshwater ecosystems face significant threats from flow modification, invasive alien species, pollution and climate change. The situation is further complicated by institutional arrangements – while DWAF is the national department responsible for the management of water resources, DEAT is mandated to manage and conserve biodiversity. There is therefore a grey area as to how responsibility for freshwater biodiversity should be shared.

In response to the matters highlighted above, a process was initiated that resulted in the drafting of a discussion paper on cross-sector policy objectives for conserving South Africa's inland water[5] biodiversity (Roux *et al.* 2006). The process led to the definition of a national goal for freshwater conservation in South Africa (Roux *et al.* 2006 pg x):

"to conserve a sample of the full variety or diversity of inland water ecosystems that occur in South Africa, including all species as well as the habitats, landscapes, rivers and other water bodies in which they occur, together with the ecosystem processes responsible for generating and maintaining this diversity, for both the present and future generations".

Five policy objectives were identified to support achievement of this goal (Roux *et al.* 2006):

- Set and entrench quantitative conservation targets for inland water biodiversity;
- Plan for representation of inland water biodiversity;
- Plan for persistence of inland water biodiversity;
- Establish a portfolio of inland water conservation areas;
- Enable effective implementation.

The National Freshwater Ecosystems Priority Areas (NFEPA) project was established to take forward these objectives as well as to build on the river component of the NSBA 2004 and feed into the NSBA 2010. NFEPA is a two-year partnership project that runs until the end of 2010. It is led by the South African National Biodiversity Institute (SANBI) and the Council for Scientific and Industrial Research (CSIR) and is supported with funds and/or expertise from a diverse range of stakeholders including DWAF, the Water Research Commission (WRC), WWF-SA, SANParks, DEAT and the South African Institute for Aquatic Biodiversity (SAIAB).

[5] Inland water includes rivers, wetlands and estuaries.

The aims of NFEPA are:

- To identify a national network of freshwater ecosystem priority areas, including rivers, wetlands and estuaries, using systematic biodiversity planning techniques and incorporating expert review. This will include a focus on free-flowing rivers and national freshwater rehabilitation priority areas;
- To develop an institutional basis for implementing the freshwater ecosystem priority areas through engaging with key stakeholders and through pilot projects in at least two Water Management Areas.

In addition, NFEPA will seek to strengthen the relationship between available legal tools in the water and biodiversity sectors through engagement with DWAF, DEAT and SANBI. The legal tools identified include:

- Declaring protected areas or protected environments under the Protected Areas Act;
- Listing of threatened or protected ecosystems under the Biodiversity Act;
- Publishing bioregional plans which identify critical biodiversity areas for terrestrial and aquatic biodiversity under the Biodiversity Act;
- Determining the management class and implementation of the ecological reserve for rivers, wetlands and estuaries under the National Water Act (NWA).

2.5.4. Progress in respect of NBSAP Strategic Objectives

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

Good progress has been made with establishing the framework for biodiversity management with national strategies and plans largely in place, although a number of the tools that will facilitate integrated planning and development decisions are still being developed. With the focus shifting towards implementation, resource and capacity constraints to implement the plans is a potential challenge.

Opportunities exist for the sector to engage more strongly with the relevant government departments on trade and industrial policy, as well as with the Presidency on national policy instruments, for example the National Spatial Development Perspective and South Africa Scenarios: 2025. The use of fiscal incentives is gaining momentum (refer to section 3.2.8 for further discussion) with the major challenge being to gain wide-spread support and adoption of the measures, as well as the capacity and resources to implement the measures. Statistics South Africa is leading the development of Natural Resource Accounts. The national accounting system has previously ignored the impact of the flows of economic activity on the stocks of natural capital; the depletion and degradation of environmental assets is thus not accounted for in national accounts and is generally ignored by the public and private sectors. Statistics South Africa aims eventually to produce natural resource accounts for minerals, water (including water quality), land, energy, biodiversity, air quality, aquatic resources and wooded land, timber and forest products.

Substantial progress has been made with developing a framework for incorporating biodiversity considerations into land-use planning and decision-making (see section 3.4), with a coherent set of tools (including provincial spatial biodiversity plans, bioregional plans and listed threatened ecosystems) under development that will allow integration of biodiversity priorities in spatial planning and development decisions. Some of these tools are being piloted and tested in the bioregional programmes (see section 3.3.2). Challenges to effectively implement the tools are likely

to be encountered, firstly to elevate the importance of biodiversity to decision-makers and secondly to create the capacity to apply the tools consistently and effectively, especially at the local government level.

Table 2-2: NBSAP 15-year targets, outcomes, progress and challenges for Strategic Objective 1

NBSAP 15-year targets	• **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**
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**	
Progress • Exercises have been performed to estimate the value of ecosystem services, incorporating biodiversity-related services, to the South African economy at a national scale • Several local studies undertaken or are in progress – economic valuation of certain ecosystem services is taking place through bioregional programmes as well as for aquatic resources as part of the water resource classification process under the National Water Act • Methodology for valuation studies improving with guidelines being developed • Stats SA working on initiative to develop Natural Resource Accounts	
Challenges • Valuation studies are not always taken into account in informing policy at provincial or national level • Valuations are performed but are not necessarily considered in trade-off decisions, for example water allocation • Valuations need to be site specific rather than estimating "general" values • Limited expertise for performing studies • Limited monitoring of biodiversity values at provincial and local level, with resources for monitoring a constraint • There are many examples of biodiversity contributing to livelihoods, but case studies are often not written up in easily accessible form and disseminated • Some excellent studies and information is available – the challenge is to present these to politicians and decision-makers at the national, provincial and local levels in support of a strong case for biodiversity	
Outcome 1.2 **Biodiversity considerations are integrated into macro-economic, trade, industrial and fiscal policy**	
Progress • Fiscal reform receiving attention with draft Environmental Fiscal Reform framework developed in 2006 and being implemented through important new tax incentives (see section 3.2.8) • CITES and TRAFFIC in place for trade in species • Some private sector companies apply triple bottom line reporting and "green" procurement • DEAT is participating in WTO technical negotiations to ensure a balanced approach between trade and its impact on the environment • Several initiatives to recover costs from biodiversity use – levies and concessions on diving, fishing, protected area tourism etc. • National Framework for Sustainable Development (NFSD) published and could be tool to integrate biodiversity into planning processes of other government departments (see section 3.2.3)	
Challenges • Biodiversity generally not integrated into macro-economic policy and opportunity exists to engage more actively with trade and industry policy-makers, especially the Department of Trade and Industry • The biodiversity sector needs to engage with cross-cutting national policy initiatives such as the National Spatial Development Perspective and South Africa Scenarios: 2025 • The Biofuels Industrial Strategy of South Africa developed by the Department of Minerals and Energy does not consider biodiversity and focuses strongly on crop-based agro-fuels, raising the level of potential threat to habitat loss and with implications for water resources and aquatic biodiversity	

Outcome 1.3 **Biodiversity considerations are integrated into resource management policy and legislation**
Progress • Biodiversity is incorporated in the National Framework for Sustainable Development in South Africa with sustaining ecosystems and using natural resources efficiently one of five key strategic priority areas for action and intervention (see section 3.2.6) • Biodiversity considerations are incorporated in some new legislation such as the National Forests Act, Marine Living Resources Act and the Integrated Coastal Management Act • The National Water Act establishes the principle of an ecological reserve, being the water required to protect the aquatic ecosystems of the water resource and to secure ecologically sustainable development and use of the relevant water resource
Challenges • Legislative framework is good, but implementation is constrained by resources and human capacity • Impacts of mining on biodiversity are generally poorly considered • Agricultural legislation is outdated and needs revision (new Sustainable Use and Protection of Agricultural Resources Bill under development for some time but progress unclear) • A more co-ordinated approach and synergy between natural resource management policies and legislation is required to explicitly address biodiversity
Outcome 1.4 **A national biodiversity planning and assessment framework informs all decisions regarding land and resource use and spatial development**
Progress • A coherent set of tools is being developed to incorporate biodiversity into environmental assessment, land-use decisions and Spatial Development Frameworks (SDFs). These tools Include provincial spatial biodiversity plans, bioregional plans and listing of threatened ecosystems (see section 3.4) • Guideline for Bioregional Plans developed, and several provinces and metropolitan municipalities are in the process of preparing bioregional plans • Draft list of threatened terrestrial ecosystems developed, soon to be gazetted for public comment • Development of ecosystem guidelines for environmental assessment piloted in the Western Cape • NSBA is an important base that informs many of the above tools • NSBA 2010 is underway • National biodiversity offsets policy being developed
Challenges • In spite of the available tools, land-use planning decisions do not always take biodiversity into consideration (see section 3.4 for further discussion) • Limited fine-scale biodiversity data available for incorporation into tools that inform land-use planning and decision-making • Building capacity in provincial and local government to apply tools consistently and effectively • Administrative adherence to legal requirements in land-use planning and the EIA process • Inadequate intergovernmental co-operation in regulating land and resource use

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

Effective and efficient management of biodiversity in the country has to be underpinned by institutions that have appropriate mandates and have the financial, human and other resources and capacity to perform their functions. Several government departments and institutions in all three spheres of government have responsibility for biodiversity management (see section 3.2.1). There are concerns about the lack of co-ordination and co-operative governance between the different organs of state involved in biodiversity management (see section 3.2.4).

The general perception is that the government departments and institutions are not fully effective due to the lack of human capacity to perform their functions, as suggested by the high staff turnover that these departments and institutions experience as well as by their high number of vacant posts

and difficulties experienced in recruiting suitably qualified and experienced staff. In addition, funds available for biodiversity management in South Africa are limited. A recent costing exercise for the NBF concluded that R7.6 billion will be required over the next five years to implement the Priority Actions of the NBF. Of this, R4.2 billion has been budgeted for by the implementing institutions, while an additional R3.4 billion is required (EnAct 2008). Further discussion on funding is found in section 2.6.

SANBI has initiated the development of Human Capital Development Strategy for the biodiversity sector, which will seek to address the challenge of scarce skills in the sector and the need for transformation. Current challenges include weaknesses in the primary and secondary education system, which produces a small pool of school-leavers who have the maths and science qualifications necessary to pursue natural sciences at the tertiary level. The sector also struggles to attract and retain skilled individuals.

South Africa has recognised that widespread access to biodiversity information improves organisation efficiency and service delivery. Significant progress has been made with providing ease of access to scientific biodiversity information that contributes to policy and decision-making, with much of the information being made available via the internet.

Research is an important component of integrated management and an initiative has been launched to develop a National Biodiversity Research Strategy for the country that will highlight priority research areas. South Africa has a strong research community, including academic institutions, research institutes, NGOs and government agencies. Challenges include the need for more inter-disciplinary research, especially research that integrates natural and social sciences. There are also information gaps in certain areas that need to be filled, while a further challenge is that the scientific community is ageing and is not being adequately replaced by a new generation of scientists. The research that is produced in South Africa is generally distributed through publications, websites and participation in international forums.

Monitoring is an important aspect of biodiversity management. Although monitoring does take place at various levels, the National Biodiversity Monitoring and Reporting Framework is still under development, as discussed in section 2.4.

Raising public awareness of biodiversity, its importance and the pressures which it faces, is essential to mainstream biodiversity in society and encourage biodiversity-friendly behaviour. Various government and NGO programmes are in place to raise awareness and provide environmental education. However, challenges are to co-ordinate efforts and make relevant information available to ensure that the message is effectively conveyed.

The final aspect of SO2 is international and regional co-operation, where generally good progress has been made by South Africa, particularly with its neighbours and in the Southern African Development Community, with the joint implementation of six Transfrontier Conservation Areas (TFCAs) evidence of this co-operation.

Table 2-3: NBSAP 15-year targets, outcomes, progress and challenges for Strategic Objective 2

NBSAP 15-year targets	• **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**
Outcome 2.1 **The biodiversity sector is transformed and representative of South African society**	
Progress • National policies and legislation are in place for employment equity and skills development • Funding for skills development and learnerships is available through Sector Training and Education Authorities (SETAs) • A Human Capital Development Strategy for the biodiversity sector has recently been initiated to address transformation and scarce skills in the sector	
Challenges • The private sector is not as transformed as the public sector • There are weaknesses in the education system, resulting in a small pool of school leavers with the maths and science qualifications needed to pursue natural sciences at tertiary level • Biodiversity is not seen as a career of choice and is not attracting entrants in sufficient numbers • Retaining individuals in the sector is a challenge, with high levels of staff turnover experienced • There are many capacity building initiatives in the sector but these are not effectively co-ordinated	
Outcome 2.2 **Co-operative governance at all levels results in improved biodiversity management**	
Progress • Various committees and working groups established to facilitate co-operative governance (see section 3.2) • Several examples of good co-operation between different organs and state / conservation agencies, sometimes formalised through Memoranda of Understanding • The bioregional programmes have been an effective mechanism for strengthening relationships and co-operative governance between national, provincial and local government departments and agencies	
Challenges • Mandates of different government departments and institutions unclear in certain key areas , for example, lack of clarity about the shared mandate between DWAF and DEAT for freshwater biodiversity • Examples of lack of co-operation between DEAT and Department of Minerals and Energy related to the mining sector • Limited integration and co-ordination on development applications between competent authority for EIA applications (DEAT or provincial environmental departments) and other licensing applications such as water licenses, agricultural rezoning or mining • In general, co-ordination of biodiversity sector may not be functioning optimally (see section 3.2.4)	
Outcome 2.3 **Institutions with biodiversity-related responsibilities are effective, efficient and adequately capacitated**	
Progress • Several national and provincial government departments and agencies mandated to undertake various aspects of biodiversity conservation and management and have significant resources, although challenges remain • Well established NGO sector that fulfils various important functions in biodiversity sector • Programmes have been initiated by DEAT (Local Government Support Programme) and SANBI / DPLG (National Municipal Biodiversity Programme) to support environmental functions and competencies in local government	
Challenges • Urgent need to develop human capital to address scarce skills and transformation • Institutional effectiveness hampered by inability to fill vacant posts with suitable candidates and by high staff turnover (resulting in loss of institutional memory),	
Outcome 2.4 **Financial resources for biodiversity management are adequate and effectively and efficiently used**	

Progress

- Substantial international donor funding received, including from the Global Environmental Facility (GEF) through the CBD finance mechanism (see section 2.6.3)
- Local private and corporate donors make significant contributions to biodiversity, mainly to the NGO sector
- Conservation agencies retain internally generated revenue
- Significant funding raised externally for bioregional programmes (refer to section 2.6.3)
- Funding allocated to cross-cutting programmes such as Working for Water and Working for Wetlands by government

Challenges

- Funding for biodiversity limited in relation to the size of the task-at-hand and will remain under pressure as limited public funds are directed to meeting government's competing socio-economic priorities
- There are disparities in the funding available for biodiversity management, especially between provinces and municipalities, and this hampers effective implementation
- Limited funding for core functions of provincial conservation agencies (such as Invasive Alien Species management), and reliance on external programme and project funding for activities
- Donor funding is not a sustainable source of funding
- NGOs are generally not well capitalised

Outcome 2.5

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

Progress

- Biodiversity Information Management Forum, hosted by SANBI, established in 2008 to co-ordinate efforts in biodiversity management information
- SANBI Integrated Biodiversity Information System (SIBIS) Project underway, which aims to centralise biodiversity information databases and provide web interface to make info available to public
- SANBI's Biodiversity GIS (BGIS) website established for making spatial biodiversity information publicly available (see Box 5)
- SANBI manages South Africa's Integrated Biodiversity Information Facility (SIBIF), which is linked to the Global Biodiversity Information Facility (GBIF)
- SANBI has initiated a process to develop a National Biodiversity Research Strategy to identify priority areas for research
- Various institutions involved in research – universities, museums, government departments and research institutions
- The Department of Science and Technology (DST) sees scientific research as a priority for the country and developed a National Research and Development Strategy in 2002 that included bioscience and bio-research as one of five key focus areas
- Funding for research available from government (National Research Foundation and others), tertiary institutions and private sector
- South Africa's government agencies such as SANBI and SANParks and research institutions publish and distribute literature on biodiversity through various channels including journals, international symposia and websites
- SANBI is developing a National Biodiversity Monitoring and Reporting Framework (see section 2.4)
- The South African Environmental Observation Network (SAEON) has been established and plays a monitoring role (see Box 6)
- Several Atlas projects underway that assist in monitoring of important species (see Box 7)
- Management effectiveness of protected areas is being tracked through tools such as the Management Effectiveness Monitoring Tool (METT)
- River Health Programme monitors health of rivers
- The bioregional programmes are developing monitoring and evaluation frameworks, aligned with the National Biodiversity Monitoring and Reporting Framework

Challenges

- Significant data gaps exist, for example, the lack of reliable up-to-date land cover data at an appropriate scale
- Research is recognised as a priority but is constrained by limited funding and capacity, especially in some

conservation agencies
- There are a limited number of emerging scientists, especially black scientists, entering fields such as taxonomy, biosystematics, and ecology, and retaining skilled researchers is a challenge
- Museums have important zoological collections but suffer from lack of funding and staff shortages, with the possibility of losing valuable data housed in museums
- Indicators for monitoring biodiversity are not fully developed
- There are limited data that are comparable over a number of years to establish relevant trends in key areas of biodiversity
- Individual capacity to understand wide range of biodiversity areas and relevant indicators still being developed
- Monitoring for impacts of IAS, climate change and GMOs to be developed

Outcome 2.6

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

Progress

- *Indalo Yethu* established by DEAT to design and implement environmental awareness campaign, although this programme deals with the environment generally and does not have a specific biodiversity focus
- Various education and outreach programmes by *inter alia* SANBI (botanical garden-based Biodiversity Education and Empowerment, Outreach Greening and Greening the Nation) and SANParks (Kids in Parks)
- NGOs involved in biodiversity education and training including Wildlife and Environment Society of South Africa (WESSA) and Wilderness Leadership School

Challenges

- Achievements and outputs from sector, including research, are not always effectively communicated
- No continuous overarching national awareness-raising programmes for use of biological resources
- Efforts in biodiversity education are not co-ordinated and there is no overarching framework to set standards and content for curricula (although this should be addressed by the Human Capital Development Strategy for the biodiversity sector, recently initiated by SANBI)
- Comprehensive national communication, awareness raising and advocacy campaign not yet developed

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

Progress

- South Africa co-operates with other countries and international bodies through being a signatory to various international conventions such as the CBD, CITES, UNCCD and UNFCCC, and also has good relationships with other international organisations and NGOs such as GEF, CEPF, IUCN and WWF
- Party to several international agreements relating to shared water resources
- Supports African Union and NEPAD environmental initiatives including Environmental Initiative Plan
- Regional co-operation through being signatory to Southern African Development Community (SADC) protocols including Protocols on Wildlife, Water and Forests and SADC Renaissance Fund
- Six TFCAs in implementation phase
- Implementing Succulent Karoo Ecosystem Programme (SKEP) biome programme with Namibia
- Party with Angola and Namibia to Benguela Current Large Marine Ecosystem (BCLME) initiative
- Several international collaborations for co-operation, research and information sharing by institutions such as DEAT, SANBI, MCM and SANParks including research base at Antarctica
- Participated in SADC Regional Environmental Education Programme to enable environmental education practitioners and strengthen processes

Challenges

- Challenges in implementing TFCAs include cross-border security issues and the resources and capacity to jointly implement the plans with other countries
- National Clearing House Mechanism for CBD no longer operational

Box 5: Biodiversity GIS (BGIS) website

SANBI manages the BGIS initiative which provides access to spatial biodiversity planning information via its website. This is used to inform biodiversity planning, research and land-use decision-making. The BGIS maps and databases provide information on ecosystems, vegetation types, rivers and wetlands, protected areas and habitat transformation. The website also has links to digital copies of relevant reports, such as the NSBA. The information is organised according to municipal boundaries as well as ecological regions. Using the website, a land-use planner or developer can call up a map of the municipality, identify administrative boundaries and use conservation maps to highlight any threatened habitat types.

The following value-added services are also provided:

- Making data and information accessible by reproducing it in digital (DVD & CD) and print (maps & posters) format,
- GIS, information management and web mapping training,
- Data and information analysis, interpretation and application, including through an online Land Use Decision Support Tool,
- Specialist advice on spatial information management practices.

By February 2009, there were 1 683 registered users on BGIS. During 2008 there were 90 000 visitor sessions, at an average of 245 per day. Visit BGIS at http://bgis.sanbi.org.

Box 6: South African Environmental Observation Network (SAEON)

SAEON is a research facility that establishes and maintains nodes linked by an information management network to serve as research and education platforms for long-term studies of ecosystems, both terrestrial and marine, that will provide for incremental advances in our understanding of ecosystems and our ability to detect, predict and react to environmental change. SAEON intends to bring better cohesion between research programmes nationally and internationally and will ensure that long-term ecological research data is archived and accessible as a national asset for generations to come. SAEON nodes have been established in the savanna and fynbos biomes and in marine-offshore, coastal and estuarine systems. Further nodes are planned for the grassland and arid systems. Monitoring and research is conducted at various spatial and temporal scales appropriate for answering questions on the impacts of the drivers of global change on biodiversity, biogeochemical cycling and productivity, hydrological functioning and sediments, and disturbance regimes such as fire. More information is available at www.saeon.ac.za.

Box 7: Overview of Atlas initiatives

Atlases provide a source of data for conservation bodies on species status and management, as well as for analysing distribution patterns and monitoring changes therein, while also facilitating the assessment of the impact of human-related activities and habitat destruction on species. Currently SANBI is co-ordinating four large atlasing projects on reptiles, butterflies, arachnids and birds, in partnership with other organisations. The atlas programmes are generating extensive distribution data.

The **South African Reptile Conservation Assessment (SARCA**) Project was launched in 2005 and will be completed in June 2009. The project runs in partnership with the University of Cape Town's Animal Demography Unit (ADU). SARCA depends heavily on the collaboration of all herpetologists and museums in southern Africa, as well as on the participation of members of the public. The project aims to improve understanding of the diversity and distribution of reptiles in southern Africa, thereby improving the conservation status of these animals in the region. SARCA fieldwork is complete and all museum records have been encoded. It is anticipated that the Atlas and Red Data Book manuscript will be completed and be ready for publishing by the end of June 2009.

The **South African Butterfly Conservation Assessment (SABCA)** Project, a four-year conservation project aimed at determining the distribution and conservation priorities of all butterfly species in the Southern African region, especially those threatened with extinction, was launched in May 2007. Three leading institutions have created a significant partnership to implement SABCA, namely SANBI, the Lepidopterists' Society of Africa (LepSoc) and the University of Cape Town's Animal Demography Unit (ADU). The project is co-funded by the Norwegian Ministry for the Environment and SANBI. It is co-ordinated by the ADU. LepSoc is responsible for the collection of butterflies in the field, as well as for providing expertise in identification of butterflies. A version of Lepidops software is available for the capture of existing and new data. Distribution maps for each species of butterfly are available on the SABCA website. The initial evaluation for each species of the Conservation Assessment database has begun, so far 180 species have already had red list assessments conducted.

The **South African National Survey of Arachnida (SANSA)** is a four-year inventory and conservation assessment project — dedicated to unify and strengthen biodiversity research on spiders, scorpions and other arachnid fauna of South Africa. It is a partnership project between the Spider Research Unit at the Plant Protection Research Institute of the Agricultural Research Council (ARC) and SANBI. The main highlights for SANSA include the carrying out of a GAP analysis - this analysis was used to determine where the first SANSA field surveys were to take place; approximately 15 000 spiders were identified by local and international experts and 10 500 arachnid records were digitised. Several new species were collected. Data on all 72 African spider families was uploaded on to the ARC website. Arachnid lectures were presented on road shows to schools and other interested parties. One of the SANSA challenges is that there are very few South African arachnologists and this impacts negatively on the identification of arachnids.

Southern African Bird Atlas Project 2 (SABAP2) is an update and refinement of the first Southern African Bird Atlas Project which ran from 1987-1991 and culminated in the publication in 1997 of two volumes on the distribution and relative abundance of southern African birds. SABAP1 largely achieved its objective of providing the first quantitative description of the distribution of all bird species in southern Africa, and represented a "snapshot" of the distribution of each species during the late 1980s to early 1990s. It also involved a large number of lay people as citizen scientists and made a huge contribution to the public understanding of science, participation in biodiversity data collection and public awareness of birds. SABAP2 seeks to monitor distribution changes in bird distributions due to ecological changes. Specific aims are:

- A scientifically rigorous, repeatable platform for tracking through time and space the impacts of environmental change on southern African birds, through standardized data collection on bird distribution and an index of abundance and
- Increased public participation in biodiversity data collection, and public awareness of birds, through large-scale mobilisation of citizen scientists.

The atlasing projects have recorded impressive progress. The Virtual Museums of the atlasing projects are growing rapidly and have already received some interesting sightings, e.g. rare species, new localities, and evidence of range expansions. So far the SARCA virtual museum has recorded a total number of 5 436 entries while SANSA and SABCA have processed a total number of 946 and 4 500 respectively. Public participation is helping in filling gaps of distribution of these invertebrates in the atlas region. All the atlasing programmes produce quarterly electronic newsletters which are available on their respective websites. These newsletters keep everybody updated on the activities these programmes.

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

There are many cross-cutting aspects to the integrated management of biodiversity and its sustainable use, including mainstreaming of biodiversity. Chapter 3 deals with mainstreaming and

several of these aspects are discussed in greater detail in that chapter, but an overview of key progress and challenges is provided here.

The bioregional programmes, discussed in further detail in section 3.3.2, have been central in mainstreaming biodiversity in the country and these programmes continue to achieve significant biodiversity conservation and socio-economic successes, for example, by conserving biodiversity priority areas and creating biodiversity corridors in landscape initiatives. A challenge that the biodiversity sector will face is to make sure that biodiversity considerations are integrated in the upcoming roll out of the Water Resource Classification System and in the functioning of Catchment Management Agencies that are being established to manage water resources.

The NBSAP and NBF recognise the importance of managing the impacts of invasive alien species (IAS), climate change and Genetically Modified Organisms (GMOs). South Africa is putting in place a strong response to climate change (see section 3.2.5), and has had programmes such as Working for Water in place for a number of years to eradicate IAS. An Environmental Risk Assessment Framework for GMOs has recently been released.

While still at an early stage of implementation, there are encouraging signs regarding incentive measures that promote biodiversity conservation with several projects underway to mainstream biodiversity in business and production sectors through certification and labelling schemes (discussed in section 3.2.7).

As discussed under SO1, land-use planning and decision-making should be informed by environmental management measures, including planning, impact assessment and other tools, and mainstreaming biodiversity in land-use planning and decision making is a key to achieving SO3. A National Municipal Biodiversity Programme has been initiated in support of this. The current status of various initiatives is more fully discussed in section 3.4.

Table 2-4: NBSAP 15-year targets, outcomes, progress and challenges for Strategic Objective 3

NBSAP 15-year targets	• **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 significant contributions towards biodiversity management and consider biodiversity in all decisions regarding resource use**
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**	
Progress • Various bioregional programmes with cross-cutting functions are co-ordinated by SANBI and are successfully undertaking pilot projects and sharing lessons (refer to section 3.3.2) • Marine Programme has been established and Freshwater Programme is in process of being established, with co-ordination units housed at SANBI • A National Municipal Biodiversity Programme has been initiated by SANBI, in partnership with the Department of Provincial and Local Government • Estuarine management plans are being developed	

- Ecological reserve established for most rivers, Water Resource Classification System developed and Catchment Management Agencies in process of being established, thereby providing opportunities for biodiversity to be incorporated into freshwater management strategies

Challenges

- Ensuring that there is sufficient capacity in the provincial conservation agencies to absorb some of the responsibilities currently undertaken in pilot projects in the bioregional programmes
- CMAs are still in the process of being established and need to build capacity and be allocated sufficient resources for biodiversity to be integrated into water management
- Biodiversity sector needs to build capacity to participate in CMAs and in the water resource classification process

Outcome 3.2

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

Progress

- Various initiatives, driven by NGOs and bioregional programme co-ordination units, seek to mainstream biodiversity in the private sector through certification programmes (refer to section 3.2.7) and considerable successes have been achieved, for example, in the wine, fishing, honey, cut-flowers, sugar, rooibos tea and potato sectors
- Efforts to link biodiversity into mining best practice with the Mining and Biodiversity Forum established
- Bird management programme by Eskom (the national electricity utility)

Challenges

- Ensuring the sustainability of certain of the current production sector initiatives where the projects are funded through donor funds and managed as pilot projects with limited lifespans as part of the bioregional programmes
- Ensuring adoption of biodiversity friendly practices by other key production sectors currently not part of the initiatives, and maximising the adoption of these practices by producers within all sectors
- While the uptake of the programmes has been substantial, the benefit to biodiversity is yet to be confirmed – need to verify and quantify the benefits to biodiversity
- The emerging biofuels sector could have major negative impacts on biodiversity and there is a need to engage with this sector

Outcome 3.3

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

Progress

- Working for Water Programme for IAS is well established while funding also available through DEAT's Social Responsibility Programme (SRP) projects, Working for Wetlands and other sources
- Growing awareness of IAS as a national problem
- Regulations for IAS are being developed, to be published in terms of the Biodiversity Act

Challenges

- National response to IAS threat not comprehensive
- Invasive Alien Species regulations not yet finalised
- Marine and seascape not yet addressed
- Pet trade not addressed as an issue
- Co-ordination between agencies and the IAS programmes lacking
- Resources for IAS management limited in spite of substantial government support to Working for Water and other programmes
- Biofuels sector could potentially increase IAS risks

Outcome 3.4

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

Progress

- South Africa is proactively addressing the climate change threat, including through the development of a National Climate Change Response Strategy and an associated implementation plan (see 3.2.5)
- The recently passed Integrated Coastal Management Act incorporates climate change impact on coastal development and requires setbacks
- NPAES has climate change resilience as goal for expanding protected area network

• Establishment of the Climate Action Partnership, an alliance of six NGOs that aims to reduce the impacts of climate change and increase the resilience of South Africa's biodiversity and communities to the predicted impacts
Challenges • In spite of significant awareness of climate change threats to the country, there is not a strong recognition of the role that biodiversity and intact natural ecosystems can play in providing cost-effective climate change resilience • More co-ordination is required between national and provincial spheres of government • Reluctance of policymakers to adopt precautionary principle when addressing climate change adaptation
Outcome 3.5 **Effective management and control measures minimise the potential risks to biodiversity posed by Genetically Modified Organisms**
Progress • Environmental Risk Assessment Framework for GMOs published – includes regulatory requirements and processes for deployment, tools to identify impacts and risks to be considered, monitoring and reporting mechanisms, research priorities and integration into biodiversity management plans • Centre of Excellence to study GMO risks initiated • GM fish risk assessment initiated
Challenges • Resources and capacity for compliance monitoring • Lack of specialist competency in current research areas • Biofuels strategy relies significantly on GMOs
Outcome 3.6 **Effective waste management and pollution control measures limit the impacts of pollution on biodiversity**
Progress • Improved capacity for enforcement • National Environmental Management: Air Quality Act passed in 2004 • National Environmental Management: Waste Management Bill under development
Challenges • Resources and capacity for implementing and enforcing legislation, including marine pollution • Co-ordination between departments responsible for waste management • Limited capacity at local government level to deal with water pollution • Limited awareness of impacts of pollution
Outcome 3.7 **Research and monitoring programmes support integrated management of terrestrial and aquatic ecosystems**
Progress • Centres of excellence created under national strategy, including Centre for Invasion Biology (Stellenbosch) and Centre of Excellence in Birds (UCT) • Some bioregional programmes have research strategies • Bioregional programmes have developed Monitoring & Evaluation frameworks with relevant indicators
Challenges • Limited inter-disciplinary research integrating the social sciences and biodiversity • Research to explore the role of biodiversity and ecosystem intactness to increase resilience and inform responses to climate change impacts is limited • Research takes place in conservation agencies but the capacity for undertaking this research has reduced in recent years

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

South Africa's biological resources provide direct benefits both to support livelihoods of communities, with harvesting of resources for food, medicinal purposes and building materials, and for certain economic sectors such as ecotourism, fishing, agriculture and hunting. The sustainable use and equitable sharing of South Africa's rich biological resources is therefore critical for economic

development and the alleviation of poverty. Lack of knowledge on the current levels of harvesting of many resources, such as medicinal plants, hampers the establishment of sustainable levels of use levels. However, several projects involving local communities applying Community Based Natural Resource Management principles are being implemented in various sectors from forestry to medicinal plants and eco-tourism. As highlighted earlier, marine resources are under pressure and there is a need to use these resources sustainably.

A land restitution process is in progress, with implications for biodiversity and conservation management, particularly the network of protected areas. The Restitution of Land Rights Act (22 of 1994), as amended, provides for the restitution of land in respect of which persons or communities were dispossessed of during apartheid. A number of claims on Protected Areas have been settled, while others are at various stages of the settlement process, which generally takes a number of years to finalise. The culmination of the process is a land settlement agreement between the state and the claimants, and thereafter a process of engagement which results in a co-management and benefit sharing arrangement between the new land owners and the conservation agency responsible for the management of that particular Protected Area. Land reform and protected areas are sometimes seen as being in conflict with one another, but significant opportunities exist for mutually reinforcing synergies between land reform and protected area expansion, discussed further under Strategic Objective 5 below.

Enforcement of regulations on natural resource harvesting is a general challenge, with capacity a major constraint. This applies particularly to certain species such as cycads, abalone and rhino, with illegal harvesting and poaching a threat.

The Biodiversity Act provides for the regulation of bio-prospecting and the export of indigenous biological resources as well as for the fair and equitable sharing of benefits arising from bio-prospecting. To give effect to this chapter of the Biodiversity Act, the Regulations on Bio-Prospecting, Access and Benefit Sharing came into force on 1 April 2008. These regulations have been work-shopped with the provinces as this is a co-operative governance function between national and provincial government, but many of the provinces have not yet had the responsibility delegated to them by their respective provincial cabinet ministers, so the regulations are not yet operational in all provinces.

Table 2-5: NBSAP 15-year targets, outcomes, progress and challenges for Strategic Objective 4

NBSAP 15-year targets	• **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**
Outcome 4.1 **An equitable access, rights and responsibilities regime promotes sustainable use of biological resources**	
Progress • Regulations on bio-prospecting, access and benefit-sharing have been developed and promulgated and regulations are being implemented by some provinces • An implementation plan for the regulations has been developed • Material Transfer Agreements and Benefit-sharing agreements have been entered into with some local communities • DST has developed a national policy on indigenous knowledge and inter-governmental committee on	

Indigenous Knowledge Systems established

- The National Forests Act regulations give communities access to forestry
- Forestry enterprise development being implemented
- Land reform programme being implemented and gives consideration to sharing of benefits arising from protected areas – Memorandum of Agreement concluded between DEAT and Department of Land Affairs
- Co-management and benefit sharing agreements concluded between conservation agencies and some land claimants for protected areas
- People & Parks Programme established and considers role of protected areas in local economic development, with Access and Benefit Sharing one of the thematic areas
- Decrease in allocation of fishing quotas but other incentives have been made available to stakeholders e.g. DEAT through SRP programmes has aquacultures and mariculture projects to compensate for loss
- New subsistence fishery policy published for comment
- National Genebank established by the Department of Agriculture mainly for indigenous food crops

Challenges

- Limited capacity to implement Access and Benefit sharing (ABS) regulations
- The implementation plan for the regulations is not yet accepted by all provinces and some provinces have not been formally mandated to implement the regulations
- Insufficient co-ordination between institutions implementing the legislation.
- Need for awareness-raising on roles and responsibilities of stakeholders for the legislation
- Limited incorporation of local indigenous knowledge into biodiversity management
- Slow progress of implementation and lack of uniform approach to land reform process
- Conflict within the community property associations regarding restituted land and sharing of benefits

Outcome 4.2

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

Progress

- Participatory forest guideline series developed and being implemented, e.g. employing local communities as tour guides
- Initiatives being undertaken through Expanded Public Works Programmes e.g. Working for Water – use wood for coffins, Working for Wetlands etc
- Bioregional programmes create biodiversity-based projects to generate incomes for communities (see for example, Skeppies in 3.3.2)
- Conservation agencies, such as SANParks, promote projects for development using Community Based Natural Resource Management Programmes principles
- Government assisting traditional healers and communities to use biological resources sustainably (e.g. DWAF bark-harvesting programmes. CSIR agro-processing of indigenous plants used for oil extraction, medicinal plant nursery projects)
- Ecotourism projects, for example, Wild Coast agreements with local communities to work at hotels etc.
- Farmer to Pharma programme (refer to Box 8)

Challenges

- Public Private Partnership guidelines do not exist for all biodiversity-related sectors
- No standards (certification of products, labelling, packaging standards etc) for natural products that will facilitate trade in products
- Additional emphasis required on “value adding” of harvested resources, since the amount of resources harvested in most areas and species should not be increased
- Limited progress in establishing a natural-based product sector, especially with focus on SMMEs
- Concerns that projects may not create sustainable jobs
- Support from strategic/ technical partners to communities to ensure sustainability of natural resource projects often lacking
- Piecemeal and uncoordinated approach to partnerships

Outcome 4.3

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

Progress

- MCM involved in ongoing research and monitoring programmes for marine species (for example, see Box 9)

- Forestry – set of criteria and standards which include criteria on sustainable forestry use and biodiversity management
- New Red Data Lists for plants identified species threatened as a result of over-harvesting
- Some research undertaken into medicinal plant trade

Challenges

- Limited knowledge of current levels of harvesting of many resources inhibits establishing sustainable levels of utilisation to inform management plans for natural resource use
- Substantial data gaps for sustainable use of resources that need to be filled through research

Outcome 4.4

Use of biological resources is well managed to optimise sustainable benefits

Progress

- Ecosystem approach to fisheries (EAF) is being implemented, and MCM and WWF-SA have developed a racking tool to monitor implementation
- Ecological risk assessments have been undertaken for six fisheries in South Africa as part of the work of the Benguela Current Large Marine Ecosystem (BCLME) initiative and WWF-SA
- Fishing quotas are in place, but fishing stocks remain under pressure with the population of many species collapsed
- Fish recovery programmes being planned
- New fishing limits and permit conditions introduced to reduce incidental mortality of seabirds
- Marine Living Resources Fund established to fund enforcement of marine-related legislation
- Protected species declared under the Threatened and Protected Species (TOPS) lists under the Biodiversity Act and the National Forests Act
- Trade in threatened species regulated by CITES permits for cross border movements and TOPS
- Permits required for collection and removal of indigenous flora and fauna from protected areas
- Community Based Natural Resource Management (CBNRM) guidelines developed and being implemented at project level
- Some forests have biodiversity plans based on assessment of the resource and community needs
- Forestry – timber yield regulation methods to ensure trees are taken out sustainably
- Certification programmes for harvesting of certain species such as cut flowers (see section 3.3.2)
- Medicinal plant nurseries established to take pressure off wild resources

Challenges

- International trading in products such as rhino horns promotes poaching
- Lack of capacity to draw up, implement and monitor harvesting plans
- Limited capacity to effectively police illegal fishing, especially line fish and abalone
- Over-harvesting of marine resources has put pressure on populations of line fish species

Box 8: Sustainable use by local communities

The Department of Science & Technology has developed and is funding a ***Farmer to Pharma programme*** which deals with food crops, traditional medicines and cosmeceuticals (the screening of indigenous plants for active compounds which can be used and then taking these compounds through the value chain of identification, clinical tests etc) and indigenous jewellery. The various consortia involve several stakeholders from different institutions such as CSIR, the Agricultural Research Council, other government departments (Health, Minerals and Energy), the Medical Research Council (MRC), and universities.

The MRC is also managing a number of bioprospecting projects, funded by the Innovation Fund, to bio-prospect indigenous plants for medicines to treat malaria, TB, diabetes and to search for compounds which have immuno-modulatory effects. The research is also handled through consortia involving a number of different partners. This is a significant step forward as the different partners are responsible for using their specific skills and training and facilities to fulfil different steps in the value chain of drug development.

Box 9: Marine monitoring

A number of stock status reports have been contracted and are currently underway in the Kwazulu-Natal region. There are also contracted local recreational angling monitoring programs in Kwazulu-Natal, Eastern and Western Cape which monitor shore- and boat-based recreational effort at selected locations.
In addition, MCM initiated a national observer programme in October 2007, where shore-based observers record catch, effort and size frequencies per species from the boat-based fishery at fishing hot-spots around the country. This will be expanded in 2009 to include collection of biological data for selected species.

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

South Africa has a well-established and extensive protected area network that is generally well managed. However, as noted in section 2.5.2, South Africa's terrestrial and marine protected area networks fall short of targets. The NPAES seeks to address the deficiencies, both in the size of the areas protected and representivity of ecosystems. For MPAs, although the overall network falls short of the target, certain regional targets are met. Funding for land purchases to expand the network is a significant constraint, but there are various tools available under the Protected Areas Act which facilitate the expansion of the conservation estate on private land through contractual arrangements. Apart from expanding the protected area network, the effective management of the existing network is an important aspect, and resource and capacity constraints present a challenge in this regard.

As mentioned under Strategic Objective 4 above, there are potential synergies between the land reform process and protected area expansion. Opportunities exist to expand the protected area network by establishing community-owned protected areas, especially in agriculturally marginal areas, where communities can benefit from eco-tourism and sustainable harvesting of resources. SANBI has initiated a land reform and biodiversity stewardship programme, which is in the early stages of being developed.

The *ex situ* conservation of plant species is reasonably well progressed, but for animals this is less so. The Millennium Seedbank project team collects seed material which is cleaned and sent to the Millennium Seedbank at Royal Botanical Gardens, Wakehurst Place, where it is processed and prepared for storage. A proportion of the seed is stored in the Millennium Seedbank and the rest is returned to South Africa where it is stored in the National Genebank for future conservation and research activities in South Africa.

Table 2-6: NBSAP 15-year targets, outcomes, progress and challenges for Strategic Objective 5

NBSAP 15-year targets	• **Comprehensive biodiversity monitoring systems inform planning** • **The protected area network covers 12% of the terrestrial and 20% of the marine environment[6] thereby contributing to representative 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 'watershed to coast' protected environments are established and effectively managed**

[6] In the NPEAS, the 20% target for MPAs has been amended to 15% "no-take" and a total of 25%.

Outcome 5.1

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

Progress

- A systematic approach to biodiversity planning is the standard approach in South Africa and applies the best available science to identifying geographic priority areas for biodiversity conservation
- Methods for integrating terrestrial and aquatic features in systematic biodiversity plans are now well developed and increasingly used
- The NPAES has been developed and identifies important areas for protected area expansion
- Provincial spatial biodiversity plans have been completed by five provinces and are in progress for the other four provinces
- The provincial spatial biodiversity plans are used to inform protected area expansion, including priority areas for biodiversity stewardship
- Fine-scale biodiversity planning done for important lowland biodiversity areas in the Cape Floral Kingdom
- Systematic biodiversity planning for offshore marine areas in progress
- 2010 NSBA update in process

Challenges

- Fine-scale spatial data for fine-scale biodiversity planning not available throughout the country
- Substantial resources required for fine-scale biodiversity planning

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

Progress

- NPAES developed
- Marine Programme established in SANBI, with a strong focus on offshore MPAs, and MPA expansion (on- and offshore) receiving attention by MCM
- Agreement between national ministers to retain the status of protected areas as such where ownership is transferred to communities under the land restitution process
- Expansion of network through World Heritage Sites, Biosphere Reserves and Trans Frontier Conservation Areas
- National Freshwater Ecosystem Priority Areas project in progress (refer section 2.5.3)
- Systems being developed to manage and monitor effectiveness of protected area management (such as Rapid Appraisal of Protected Area Management System – RAPAMS; and Management Effectiveness Tracking Tool – METT)
- Management plans for protected areas are required by legislation and have been completed for many protected areas
- MPA Plans and Estuary Management Plans are being developed
- Integrated marine and terrestrial plans are being developed for protected areas that have both a terrestrial and marine component

Challenges

- Of 406 recognised protected areas in the country, only 284 are officially declared as such
- Complex and lengthy administrative process to formally declare protected areas
- National and provincial legislation for protected areas are sometimes not aligned
- Mandates for on- and off-reserve biodiversity management, especially where there is more than one mandated authority in a province, causes confusion and impedes ability to expand protected areas
- Uneven capacity amongst provincial conservation agencies results in financial and human resource limitations that prevent effective management of the current protected area network, with high staff turnover and vacancies adding to the problem
- Skills and resources for managing expanded protected area network will be a challenge
- Use of management and tracking systems do not necessarily lead to more effective protected area management
- Not all provinces have developed protected area management plans as required by the Protected Areas Act
- Limited capacity of provincial conservation agencies and communities to effectively implement co-management agreements especially for restituted land where ownership of the protected area is transferred to claimant communities

- Administrative and support systems not always fully functional to support conservation management

Outcome 5.3

Biodiversity is effectively conserved in key ecological corridors and in high priority fragments of natural habitat across the landscape and seascape

Progress

- People and Parks programme established (see Box 10)
- The Protected Areas Act provides for declaring formal protected on private and communal land with the landowner retaining ownership and management responsibility
- Provincial biodiversity stewardship programmes to incorporate private land into the protected area network and secure key ecological corridors and fragments established in two provinces and under investigation in other provinces (refer to Box 23)
- Land reform and biodiversity stewardship programme initiated by SANBI, to explore how biodiversity stewardship can actively contribute to achieving land reform targets and support local economic development in rural areas
- South Africa's southern continental shelf waters designated as a Special Area under MARPOL

Challenges

- Biodiversity stewardship programmes established only in two provinces to date
- Skills for biodiversity stewardship and related extension services limited
- Limited resources to establish and implement biodiversity stewardship programmes

Outcome 5.4

Management plans for species of special concern ensure their survival in the wild[7]

- Norms and standards for Biodiversity Management Plans (BMPs) for species of special concern developed, in terms of the Biodiversity Act
- Red Data Lists exist for several taxonomic groups and are used to identify species of special concern
- Species identified and listed under Threatened and Protected Species (TOPS) regulations in terms of the Biodiversity Act
- BMPs are being piloted for several species
- Management plans developed for several species, including elephants, turtle, bearded vulture, grass owls, blue and wattled crane, blue swallows
- National Action Plan for seabirds adopted and submitted to FAO
- South Africa is party to the Convention on Migratory Species
- NGOs play important role in conserving species of special concern
- National Zoological Gardens in Pretoria conserves certain species of fauna native to South Africa
- Nine National Botanical Gardens, managed by SANBI, established for purpose of research, public awareness and *ex situ* conservation of indigenous floral species
- SANBI in partnership with Kew Royal Botanical Gardens manages the Millennium Seedbank Project and has established a DNA Bank
- Approximately 70 herbaria in country
- Agricultural Research Council maintains *ex situ* facilities for agriculturally important species
- Breeding programmes for certain threatened fauna species such as cheetah and blue crane

Challenges

- Implementation of Biodiversity Management Plans a challenge – limited resources and capacity
- Enforcement of plans, especially with risk of poaching of species such as rhino
- Need to involve private and other landowners and general public for plans to be effective
- Monitoring of implementation and effectiveness of plans often absent

Outcome 5.5

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

Progress

- Research has informed the NPAES, which in turn is used to expand the terrestrial and marine protected area network

[7] The NBSAP only addresses survival of species in the wild. This is recognised as an oversight and will be addressed in the NBSAP update to include *ex situ* conservation of species. The progress evaluation thus includes relevant initiatives in the *ex situ* arena

- Monitoring takes place through management effectiveness tracking tools
- SANParks has active research programme with 423 projects registered and substantial research capacity
- Provincial conservation agencies undertake research, often in collaboration with research institutions

Challenges

- Lack of taxonomic data and other information to inform plans for species
- A substantial amount of research is undertaken by non-South Africans
- Uneven distribution of resources and capacity for research and monitoring, especially amongst provincial agencies

Box 10: People and Parks Programme

The 2002 World Summit on Sustainable Development and the 2003 World Parks Congress, both of which South Africa hosted, recognised the leading role of local people in biodiversity management. In response, a People and Parks programme has been established with strong participation from local communities throughout the country. The inaugural workshop culminated in an action plan that considered the role that protected areas play in local economic growth with following thematic areas:

- Co-management
- Access and Benefit Sharing
- Land Reform and Conservation
- Community Public Private Partnerships
- Expanding and Strengthening the Protected Area Network
- Implementing the Protected Areas Act

At subsequent workshops, additional themes discussed included:

- Funding and mainstreaming
- Institutional capacity building
- Benefits beyond boundaries

A National Steering Committee was established to drive the process and regular annual conferences are attended by stakeholders from across the conservation sector and communities. Important achievements linked to the programme include:

- Conclusion of a Memorandum of Agreement between the Ministers of Land Affairs and Environmental Affairs and Tourism on the settlement of land claims in protected areas
- Completion of a National Co-management Framework
- Adoption and implementation of a national action plan
- Inclusion of community representation into the National Steering Committee
- Development of structures on provincial and entity level to implement the programme
- Ensuring the development of projects to include communities in the flow of benefits linked to protected areas

2.6. Funding for priority activities

The South African government is the primary source of funding for biodiversity management in the country. In line with the constitutional requirements, funding is allocated at a national level to DEAT as well as to other national departments involved in biodiversity management such as DWAF and the Department of Agriculture. Provincial departments and provincial conservation agencies are allocated funding through their respective provincial legislatures. Government also contributes to programmes that focus on priority activities through the Expanded Public Works Programme, with allocations to initiatives such as Working for Water for invasive alien plant removal, Working for

Wetlands and DEAT's Social Responsibility Programme that includes biodiversity conservation activities. In addition to government, donor funding contributes significantly to expenditure on biodiversity conservation, with the GEF supporting many of the bioregional and ecosystem programmes (refer to 3.3.2 for further information on these programmes). Local government, NGOs, the private sector and private landowners also incur expenditure on biodiversity conservation, but it is difficult to quantify the amounts spent by these parties.

The various levels at which funding is provided by government and the multiple uses of the funds make it difficult to estimate how much funding is available for biodiversity management in the country. For example, DEAT also has a tourism mandate and portion of the funding it receives from government is used for tourism-related and other non-biodiversity activities. The conservation agencies, such as SANParks, also have tourism and hospitality management functions, but at the same time earn revenue from tourism that is retained to finance the conservation and tourism operations.

Within the above limitations, this section highlights the key sources of funding for biodiversity management in South Africa.

2.6.1. DEAT

DEAT, as the lead department for environmental management in the country, receives funding primarily from central government and incurs significant expenditure on environmental and biodiversity management. Table 2-7 reflects the total expenditure by DEAT on its various programmes in the 2006/07 and 2007/08 financial years.

Expenditure on DEAT's Marine and Coastal Management and Biodiversity and Conservation programmes can in large measure be directly attributed to biodiversity management and R709 million was spent on these programmes in 2007/08, an increase from the R603 million spent in 2006/07. Of the expenditure on Marine and Coastal Management in 2007/08, R148 million was transferred to the Marine Living Resources Fund (DEAT 2008b) – this fund was established under the Marine Living Resources Act of 1998 and is responsible for managing the development and sustainable use of South Africa's marine and coastal resources, and for protecting the integrity and quality of the country's marine and coastal ecosystems. It is worth noting that there was a tenfold increase in funding for MPAs between 2006 and 2008, albeit from a very low base. Transfers are also made by DEAT from its Biodiversity and Conservation allocation to public entities involved in the biodiversity sector (Table 2-8).

Table 2-7: Expenditure by DEAT on its programmes (DEAT 2008b)

	2006/07 financial year (R000)	**2007/08 financial year (R000)**
Marine and Coastal Management	324 048	349 298
Biodiversity and Conservation	279 579	359 833
Sub-total – directly linked to biodiversity	***603 627***	***709 131***
Administration	167 276	193 120
Environmental Quality and Protection	199 232	241 503
Tourism	547 248	612 477
Sector Services and International Relations	542 281	1 032 526
TOTAL	**2 059 664**	**2 788 757**

Table 2-8: Amounts transferred by DEAT to public entities (DEAT 2008b)

Transferred by DEAT to:	2006/07 financial year (R000)	2007/08 financial year (R000)
SANParks	137 740	191 456
SANBI	94 972	110 696
iSimangaliso	16 627	18 169

In addition to the directly attributable expenditure on biodiversity, portions of the expenditure on DEAT's other programmes are also related to biodiversity; for example, Environmental Quality and Protection relates partly to the EIA processes which include an assessment of biodiversity matters while international relations includes management of MEAs including the CBD.

Of further interest is that the Sector Services and International Relations expenditure of R1 032 million in 2007/08 included a transfer of R650 million to DEAT's Social Responsibility Programme (SRP). This programme is part of the national Expanded Public Works Programme and addresses DEAT's core responsibilities while contributing to job creation, skills development, SMME development and the upliftment of households, especially those headed by women. The focus areas of the programme are (DEAT 2007b):

- Sustainable Land Based Livelihoods (which includes rehabilitation of wetlands, landscape rehabilitation and sustainable use of natural resources),
- Working on Waste,
- People and Parks (focus on protected areas to conserve natural resources and cultural heritage, develop and upgrade infrastructure and develop benefit sharing models for communities living around protected areas),
- Working for Tourism,
- Working for the Coast (includes dune and estuary rehabilitation).

In many SRP projects, the biodiversity aspect is not necessarily the only project activity as most of the projects have multiple activities and outcomes and not all the project budget is used for biodiversity. A detailed analysis of the expenditure of the SRP projects to estimate the contribution to biodiversity has not been undertaken, but the projects do contribute significantly to biodiversity management both inside and outside of protected areas while they also have positive socio-economic benefits, for example, in 2007/08 the projects created 29 277 temporary and 430 permanent jobs (DEAT 2008b).

2.6.2. Other government expenditure

As mentioned, a portion of the expenditure by DWAF and other national departments such as the Department of Agriculture is related to biodiversity management, but without a detailed review and analysis of the expenditure patterns, it is difficult to estimate the amounts available and utilised for biodiversity management in these departments. The nine provincial governments allocate funding to their respective conservation departments and conservation agencies, but the amounts available at this level have not been estimated.

SANBI and SANParks are statutory bodies which fulfil a crucial role in conserving and managing South Africa's biodiversity. SANParks manages national protected areas while SANBI's mandate is contained in the Biodiversity Act and is very broad encompassing bioregional planning, policy, biodiversity research, education, monitoring and reporting. Apart from the operational grant

received from DEAT, these agencies earn revenue from commercial activities such as tourism and admission fees and the sale of flora and fauna, and also receive other grants (for example, from Working for Water and DEAT's SRP programme) and donations. Table 2-9 reflects the income and its sources for SANParks and SANBI for the 2007/08 financial year. The income received will not all be spent on biodiversity-related activities, for example, SANParks incurs substantial tourism expenditure. SANParks (and certain other provincial conservation agencies) manages both terrestrial and marine protected areas and commits and receives funding for this purpose.

Table 2-9: 2008 Income sources for SANParks (SANParks 2008) and SANBI (SANBI 2008)

Source of income	SANParks (R000)	SANBI (R000)
Operational grant from DEAT	136 392	110 696
Other grants, sponsorships and donations	144 191	111 056
Commercial / trading / tourism revenue	632 056	33 753
Other revenue	10 794	14 131
TOTAL	**923 342**	**269 636**

2.6.3. Donor funds

Donor funds are an important source of funding for biodiversity management. These funds are accessed in numerous ways as follows:

- Funding is made available to South Africa through Official Development Assistance (ODA) on a state-to-state basis through bilateral agreements with the funds flowing through National Treasury.
- Over and above the ODA, international donors, including development finance institutions, aid agencies and foundations, enter into arrangements outside of the government systems to provide funding to institutions such as SANBI or to NGOs. This funding is generally project specific.
- Multilateral arrangements. The GEF is the main source of this funding for the biodiversity sector given its role in the financing mechanism for the CBD.

International sources that have contributed to biodiversity management in South Africa include *inter alia,* DANCED, GTZ, NORAD, USAID, WWF, IUCN, Fauna and Flora International and the International Fund for Animal Welfare. There are local corporate or individual donors that contribute mainly to NGOs in South Africa.

The Critical Ecosystem Partnership Fund (CEPF) provided $6 million to the Cape Action for People and the Environment (C.A.P.E.) Programme, and $8 million to the Succulent Karoo Ecosystem Program (SKEP)'s first phase (see section 3.3.2 for more on C.A.P.E. and SKEP).

The GEF has made an important contribution to biodiversity in South Africa. Its funds are allocated to developing countries under the Resource Allocation Framework (RAF), which allocates funds to recipient countries based on each country's potential to generate global environmental benefits and its capacity, policies and practices to successfully implement GEF projects. Funding is provided on a four year replenishment cycle with the current cycle ending in 2010. South Africa's allocation under this cycle is $22.4 million, of which $1.9 million is unutilised (GEF 2008). The Grasslands Programme ($8.6 million) and development, empowerment and conservation in iSimangaliso (the Greater St. Lucia Wetland Park) ($9.3 million) are the main projects funded by the current RAF allocation, while

the C.A.P.E. programme ($11.3 million) is another bioregional programme that received substantial GEF support. The conservation and sustainable use of biodiversity on the Wild Coast has been allocated $6.8 million by GEF and this project is currently being implemented in the Eastern Cape.

The receiving country is required to co-finance all GEF funded projects as a pre-condition for the funding, and this requirement may have mobilised further public funds for biodiversity. Since inception, the GEF has financed 14 biodiversity projects in South Africa to the tune of $61.16 million with the co-financing provided by South Africa $253.32 million (GEF 2008).

2.6.4. Programme funding

Cross-cutting programmes under the Expanded Public Work Programme umbrella are funded by government, but outside the normal operating grants to departments and agencies. These programmes are discussed further in section 3.2.6; also see Box 14. While they also meet government's socio-economic objectives, these programmes play an important biodiversity role. The main programmes and funding for them are:

- DEAT's SRP projects, as discussed in section 2.6.1 above, with R650 million expended in the 2007/08 financial year (DEAT 2008b),
- Working for Wetlands, with R73 million spent to rehabilitate 98 wetlands in 2007/08, employing 1 986 people (SANBI 2008),
- Working for Water – in 2006/07 R470 million was spent on this programme, employing 29 470 people while 813 471 ha were treated for alien invasive species (DWAF 2007).

2.6.5. Funding to implement NBF Priority Actions

The NBF and its Priority Actions were discussed in section 2.3.4. An exercise was undertaken to analyse and estimate the costs for implementing the NBF over the five years of its implementation (EnAct 2008). The findings suggest that over the five years of the NBF, the cost of implementing the NBF objectives will amount to some R7.6 billion (EnAct 2008). Of the total, R3.4 billion is not budgeted for in current lead implementing agents' plans and is additional funding that will need to be secured by the sector if the NBF objectives are to be achieved. Human resource and administrative costs are the major components of the cost estimate – see Table 2-10 for an analysis of the estimated costs of implementing the NBF by NBF Strategic Objective (SO) and cost element.

Table 2-10: NBF Priority Actions implementation costs per cost element (EnAct 2008)

Strategic Objective (SO)	HR costs (R000)	Admin costs (R000)	Professional services (R000)	Other equipment (R000)	Land & Buildings (R000)	Total (R000)
SO 1 – Policy & legislative framework	705 795	88 766	56 115	20 762	52 556	**923 994**
SO 2 – Institutional effectiveness	765 349	410 563	143 432	13 023	33 526	**1 365 892**
SO 3 – Integrated terrestrial & aquatic management	1 895 912	787 478	430 150	104 438	150 433	**3 368 411**
SO 4 – Sustainable use	112 042	49 841	3 664	31 144	2 348	**199 039**
SO 5 – Protected areas and conservation areas	594 364	355 305	102 457	78 189	517 379	**1 647 695**
SO 6 – Regional co-operation priorities	56 654	62 305	29 735	778	4 140	**153 612**
TOTAL	**4 130 116**	**1 754 258**	**765 554**	**248 334**	**760 380**	**7 658 643**

2.6.6. Challenges

Funding for biodiversity in South Africa faces several challenges, as follows:

- The direct funding commitment of government to the environmental and biodiversity sectors is unlikely to increase dramatically in the foreseeable future with funding likely to be directed to meeting government's socio-economic priorities.
- External donor funding has played a key role in establishing and the initial implementation phases of the bioregional and ecosystem programmes. External and programme funding also plays an important role in allowing implementing agents to fulfil their biodiversity management mandate, *inter alia* through these biome and other programmes such as Working for Water. This funding is generally only for a short to medium term but contributes to the core biodiversity mandates (for example, invasive alien clearing and biodiversity stewardship programmes that expand the conservation footprint). Local agencies need to be able to absorb the programmes once the donor funding comes to an end. For example, the Western Cape provincial conservation agency CapeNature will need to take over a number of activities, such as the biodiversity stewardship programme, from the C.A.P.E. programme. CapeNature has undertaken an exercise that shows that when the C.A.P.E. funding terminates in mid-2009, it will need to employ an additional 17 personnel with an annual additional cost implication of R5.8 million in the 2009/10 financial year, increasing to R6.4 million the following year.
- The trend from donors is that amounts available for the environment and biodiversity seem to be decreasing. Biodiversity is not a priority focus area under the bilateral ODA arrangements. In addition, donors are changing the way they support countries, with grants used less than before as they move towards providing technical assistance (such as is happening with the German agencies, DED and GTZ) and a shift towards concessional loans favoured by the World Bank.

2.7. Effectiveness of the NBSAP

This section briefly considers both the contribution that South Africa's NBSAP makes to the articles and programmes of the CBD and the effectiveness of the NBSAP in meeting the objectives of the CBD.

2.7.1. Contribution of the NBSAP to CBD articles and programmes

As a signatory to the CBD, South Africa has assumed the commitments contained in the Convention. For South Africa to contribute to achieving the objectives of the CBD, it is important that its activities be aligned to the articles, programmes and cross-cutting issues of the CBD. The NBSAP is the tool through which such alignment takes place.

The development of South Africa's NBSAP took place over a two year period with extensive stakeholder participation and consultation. The NBSAP identifies South Africa's biodiversity conservation priorities in the broader context of the CBD programmes of work and cross-cutting themes, tailored to the South Africa's specific context.

A detailed assessment of the extent to which the plans and subsequent activities under the NBSAP have contributed to every one of the CBD's programmes of work and cross-cutting themes has not been undertaken. However, based on the progress highlighted in this report, it can confidently be stated that South Africa is making a substantial contribution to achievement of its commitments under the CBD. Progress in adapting the ecosystem approach through the bioregional programmes (section 3.3.2), the cross-cutting government-led Expanded Public Works Programmes that provide employment while addressing priority biodiversity threats like invasive alien species (section 3.2.6),

the programme of work for forests (Box 11) and the progress in the Global Strategy for Plant Conservation (Appendix IIIIA) are some, but by no means all, of the examples of South Africa's contribution to the CBD articles and programmes.

Box 11: Progress on Programme of Work for Forests

Parties to the CBD are expected to implement the Expanded Programme of Work on Forest Biological Diversity (as adopted at COP6) in the context of their national priorities and needs. A global assessment of the programme indicated that South Africa is implementing activities for most of the objectives under the three programme elements, but that there are gaps to be addressed. Not all of the objectives and activities are relevant to the South African situation. Although natural evergreen forests cover only about half a million hectares (less than 0.5% of South Africa's land surface) their biological diversity and functional value is proportionally much higher than the area of the biome would suggest.

The following is a brief overview of activities relating to the programme elements as far as natural evergreen forests are concerned:

a) Programme Element 1: Conservation, Sustainable Use and Benefit-sharing

South Africa applies the ecosystem approach to achieve sustainable forest management. This includes a science-based timber yield regulation system in the Southern Cape and Amatole forests aimed at maintaining the natural gap regime in these forests. Trees are selected for felling according to natural senility criteria based on intensive studies over years in the Southern Cape. Limited forest restoration is done on the forest margins, and the management of alien invaders inside the forest and on the forest margin, follows the natural succession process.

Research projects are undertaken to assess the impact of climate change on certain forests, but not yet on a co-ordinated basis. Fire Protection Agencies have been established in certain regions, including forest areas, to co-ordinate fire management by land users. A fire prediction rating system is used on State forests.

As part of the national forest spatial biodiversity planning process, a gap analysis was done to determine which forest types are under-represented in protected areas, and high conservation value forests were listed as priority for inclusion in future protected areas.

In terms of the 1996 White Paper on Sustainable Forest Development in South Africa, the Department of Water Affairs and Forestry (DWAF) has an obligation to promote community participation in forest management and to promote community upliftment where possible. Participatory Forest Management (PFM) forums have been established to facilitate this process and a number of community upliftment programmes are being undertaken (e.g. bee keeping and medicinal plant projects) in which women play a prominent role.

DWAF is responsible for putting PFM policy into practice. A PFM Toolkit has been developed with support from DANIDA, to provide guidelines for community-based approaches to forest management, including the conservation and sustainable use of forest biodiversity. Pilot projects undertaken include the Sizamimphilo Bark Harvesting Project to develop sustainable approaches to the harvesting of bark from natural forests for traditional medicine. The basis of the new approach is that community involvement will do more for forest conservation in the rural environment than the current approach of protective management.

Criteria, Indicators, Standards and Measures for Sustainable Forest Management were developed with assistance from the Department for International Development (DFID). These criteria and indicators focus on natural evergreen forest and commercial plantation forestry, but exclude the deciduous woodlands. Meanwhile about 80% of the commercial forestry plantations received Forestry Stewardship Council certification, and even the forest management system followed in the Southern Cape evergreen forests has been certified. A variety of scientific indicators such as the species composition of forest compartments are being used in certain forests to monitor changes over time, including the impact of forest management practices.

b) Programme Element 2: Institutional and Socio-Economic Enabling Environment

Priority targets were set for forest biological diversity through the national forest spatial biodiversity planning process, which fed into the National Protected Area Expansion Strategy. Guidelines were also developed by DWAF for decision-makers to minimise the impacts of land use change affecting natural forests, which forms the basis for co-operative agreements between government agencies intent on limiting the impacts of land uses on evergreen forests. A compliance and enforcement strategy was developed for more efficient and co-ordinated enforcement of the National Forests Act and other legislation applicable to forests. National awareness activities on forest biodiversity have so far been limited to publications, press releases and Arbor Week events.

c) Programme Element 3: Knowledge, Assessment and Monitoring

A legal and technical forest definition was developed, as well as an objective forest type classification system, categorising the country's forests into eight forest groups, which can be further divided into 26 national forest types. A definition of woodlands has also been developed, and the classification system divides these into six groups and 87 types. Projects have been initiated to improve the floristic data of the various forest types in order to refine the forest type classifications and to determine their relative biodiversity values through species-area curve modelling.

National forest type classifications are used in the forest spatial biodiversity planning process of DWAF (forest types serve as biodiversity surrogates in this spatial planning), the National Protected Area Expansion Strategy of DEAT, and the listing of threatened ecosystems in terms of the Biodiversity Act. Forest sub-types serve as the basis for environmentally sensitive multiple-use zoning in certain State Forests and protected areas. A national forest inventory was developed of all forest patches of more than 2ha, and this database is currently being refined through mapping projects. Long-term forest monitoring plots have been established in most forest types. Through yearly workshops and symposia such as the Forests and Woodlands Symposium the government aims to enhance exchange of scientific information on forest management. This includes workshops to review forest management practices such as timber yield regulation.

A State of the Forests Report is produced by DWAF and updated every two years, and tabled in parliament. This reporting is done on the basis of the national Criteria, Indicators and Standards for Sustainable Forest Management.

2.7.2. Effectiveness of NBSAP

The NBSAP was published in 2005. 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. It is essentially a long-term strategy for the biodiversity sector, and includes 15-year targets.

It is difficult to assess objectively the impact of the NBSAP, for example, in turning around negative trends in biodiversity loss. This difficulty arises both from the long-term nature of the strategy, which is less than one-third into its intended life-span, and to the lack of indicators and a monitoring framework to measure progress, as already discussed.

Implementation of the NBSAP has not been formally co-ordinated. However, it has been used as an important source for informing the activities and priorities of certain stakeholders in the sector, ranging from government departments to conservation agencies and NGOs. It seems to have been effective in identifying both high-level targets for the sector and priority areas to which the limited resources should be directed. Certain of the priority areas identified in the NBSAP continue to receive attention with the bioregional programmes (discussed in section 3.3.2), an example of positive outcomes, while the NBSAP has provided a large degree of focus and direction to the NPAES (section 2.5.2) and other strategies and frameworks that are being developed in response to the

NBSAP. In general, the progress that has been made in mainstreaming biodiversity (discussed in Chapter 3) can to some extent be attributed to the NBSAP.

In spite of this progress, it seems that the NBSAP may be under-utilised as a tool to inform the planning and activities of relevant government departments in all three spheres, as well as conservation agencies. In some instances, alignment with the activities of NBSAP takes place in an ad-hoc manner rather than it being a foundation document that informs priority activities and resource allocation. As a result, there is often insufficient budget allocated to activities that fall under the NBSAP.

Some of the challenges that may be impacting on the effective incorporation of the NBSAP into planning processes are as follows:

- With the overhaul of South Africa's policy and legislative framework, there may be a perception amongst those responsible for managing biodiversity that there are "too many" strategies and frameworks in place, for example the NBSAP, NBF and NPAES have all been developed in the last five years and at the same time new legislation - the Biodiversity and Protected Areas Acts – has come into effect. The linkages between these different documents may not be fully understood and stakeholders might feel themselves unable to fully incorporate them all into their planning and implementation;
- Aligned to the above point, there may be a lack of communication between the developers of the policy at a national level and the implementers of this policy at a national, provincial and local level, as well as with external stakeholders such as NGOs, communities and the private sector;
- There is no legal obligation for implementers and managers to consider the NBSAP in their planning or to implement it;
- There is no formal system for monitoring and reporting progress on NBSAP implementation (although this will be largely addressed by monitoring and reporting on NBF implementation);
- The budgetary constraints for the biodiversity sector have been highlighted (section 2.6). Within these constraints, there may not be sufficient funding for implementing the NBSAP, particularly as additional functions that biodiversity managers are expected to perform are not necessarily matched by funding for that responsibility.

In spite of these challenges, the NBSAP is widely used within the sector and has played an important role in directing and prioritising certain activities. There can be little doubt that South Africa is better off with the NBSAP than without it, as it does provide direction for stakeholders as to where resources and efforts need to be prioritised and in this manner goes some way to focussing efforts in a common direction to achieve its goals.

2.8. Progress in respect of COP 8 matters

Parties were requested in several decisions taken at COP 8 to submit information through their national reports in relation to certain specific matters. In compliance with these decisions, relevant information on these matters is provided below.

2.8.1. Indigenous and local communities

Paragraph 2 of COP 8 Decision VIII/5 invites parties, through their national reports, to report on progress in achieving national participation of indigenous and local communities and associated capacity building. This request is related to Article 8(j) of the Convention that requires parties to respect, preserve and maintain knowledge, innovations and practices of indigenous and local

communities embodying traditional life styles relevant for the conservation and sustainable use of biodiversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovation and practices and to encourage equitable sharing of the benefits arising from their utilisation.

South Africa has made good progress in putting the legal frameworks and regulations in place for access and benefit sharing (ABS). Chapter 6 of the Biodiversity Act calls for the regulation of bio-prospecting involving biological resources and the export of indigenous biological resources from South Africa for the purposes of bio-prospecting and other types of research. The Biodiversity Act also provides for the fair and equitable sharing of benefits arising from bio-prospecting involving biological resources through the drafting of benefit-sharing and material transfer agreements. To give effect to this chapter of The Biodiversity Act, the Regulations on Bio-Prospecting, Access and Benefit Sharing came into force on 1 April 2008. There is also other legislation and policies in place, such as the Indigenous Knowledge Systems Policy, that provides for fair and adequate compensation of indigenous people and local communities for their contribution to the protection and conservation of biodiversity, research and outcomes involving their knowledge. The Patent Amendment Act, No. 20 of 2005, allows for the disclosure of origin of genetic resources and associated traditional knowledge when application is made for a patent and the Registrar can also request proof that Prior Informed Consent was obtained to access the genetic resource and/or traditional knowledge.

2.8.2. Marine and coastal – deep seabed

Paragraph 3 of COP 8 Decision VIII/21 expressed concern about the threats to genetic resources in the deep seabed beyond national jurisdiction. Members were urged to identify activities and processes which may have a significant adverse impact on deep seabed ecosystems and species and to take measures to manage such practices in the deep seabed ecosystems with a view to the conservation and sustainable use of the resources. Members are further urged to report on measures taken as part of the national reporting process.

SANBI has established a Marine Programme involving a number of partners to co-ordinate efforts in the marine environment. An Offshore Marine Protected Area (OMPA) Project has been initiated and Guidelines for Offshore Protected Marine Areas in South Africa (Sink & Attwood 2008) have been developed. The focus of the OMPA project to date has been on planning, which has included engagement and participation with stakeholders from government, scientists and maritime industries such as petroleum, commercial fishing, diamond mining, the navy and submarine telecommunications. Now that the guidelines have been finalised, the focus will shift to systematic spatial biodiversity planning to support the identification and implementation of Offshore MPAs. Further information on the project and guidelines is provided in section 3.3.2. An independent process to the aforementioned initiative has approved the gazetting of the Prince Edward Islands MPA for comment.

2.8.3. Marine and coastal – Integrated Marine and Coastal Area Management

Paragraph 4 of COP 8 Decision VIIII/24 requests members to report on measures taken to enhance implementation of Integrated Marine and Coastal Area Management in their national reports.

In the past, South Africa has experienced challenges in coastal management due to inadequacies, including lack of acknowledgement of the value of the coast that led to inappropriate decision-making for coastal development, especially environmentally insensitive development and activities that have led to over-use, degradation and inappropriate management of the coast. The Integrated Coastal Management Act was passed by parliament in 2008 after extensive consultation and public submissions, and signed into law early in 2009. The new Act promotes a holistic approach to coastal

management by viewing the coast as a system and managing it in a co-ordinated and integrated manner.

In line with the White Paper for Sustainable Coastal Development in South Africa, the Act requires that development be ecologically, environmentally and socially sustainable. The Act establishes a system of integrated coastal and estuarine management to promote the conservation of the coastal environment and maintain the natural attributes of coastal landscapes and seascapes, while ensuring that development and the use of natural resources within the coastal zone is socially and economically justifiable and ecologically sustainable. The Act further defines rights and duties of organs of state in relation to coastal areas – this seeks to overcome the previous shortcomings of fragmented planning and decision-making where several sectors of government focused on their areas of interest, such as land-use planning, agriculture, water affairs and conservation, without efforts being co-ordinated. Planning and decision-making will no longer be sectoral, but implemented through integrated planning and decision-making by the establishment of a National Coastal Management Committee, which has provincial, municipal and national representation. Provincial and Municipal Coastal Committees will also be established to promote integrated implementation of the Act.

The Act requires that within four years of it coming into effect, a national coastal management programme must be prepared and adopted for managing the coastal zone – this policy directive will provide for an integrated, co-ordinated and uniform approach to coastal management by organs of state in all three spheres of government, NGOs, the private sector and local communities. Provincial and municipal coastal management programmes are similarly required. The coastal management plans must be aligned with other statutory plans, including municipal Integrated Development Plans (see section 3.4 for discussion on these plans). A national management protocol for estuaries needs to be developed within four years of the Act coming into effect to guide the development of estuary management plans, although a dozen such plans are already in development as part of the C.A.P.E. Estuaries Management Programme.

Control of pollution in the coastal zone has also been a challenge in the past. The Act deals with marine and coastal pollution control and prohibits the discharge of effluent from a source that originates on land into coastal waters without authorisation or a permit. The Act prohibits incineration at sea and controls dumping at sea through the use of permits, in accordance with South Africa's obligations under international law.

The Act also controls development in the coastal zone. Mechanisms include the demarcation of the coast and adjustments to zone boundaries according to sensitivity of the coast, set-back lines and control of certain activities through stricter EIAs where the competent authority is obliged to take a number of relevant factors into account before authorising the activity. Developments should take coastal processes, such as wind, waves and currents that result in sediment movement, as well as the threat of sea levels rising as a consequence of global warming, into account. New coastal zones will be created to more strictly control activities causing environmental damage to dunes or draining of wetlands. Coastal planning schemes define areas within the coastal zone to be used exclusively for specified purposes or activities, or to specify areas where certain activities are prohibited, while coastal protection notices can be issued to persons carrying out, or intending to carry out, activities that have an adverse effect on the coastal environment.

Progress in the implementation and effectiveness of the Integrated Coastal Management Act will be included in future national reports.

2.8.4. Protected Areas

Paragraph 4 of COP 8 Decision VIII/24 urges other governments and multilateral funding bodies to provide the necessary financial support to developing countries, including the least developed and small island developing states, as well as countries in transition, to enable them to build capacity and implement the programme of work and undertake reporting required, to enable the review of implementation of the programme of work on protected areas.

South Africa is regarded as a developing country and has not provided support to other developing countries under the above decision. South Africa's own progress for its protected areas is addressed in several sections of this report, including section 2.5.2 which summarises the National Protected Area Expansion Strategy (NPAES) and Appendix IIIB which reviews progress towards the Programme of Work on Protected Areas. In summary, South Africa has a long established network of terrestrial protected areas and has more recently established several marine protected areas. The current protected area network falls short of protecting a representative sample of ecosystems. This will be address through the implementation of the NPAES, which contains five and twenty year targets for protected area expansion for ecological sustainability and increased resilience to climate change. The ecosystem approach has been adopted and efforts are being made through the bioregional programmes (discussed in section 3.3.2) to create ecological corridors and link priority biodiversity areas through stewardship programmes. South Africa is also implementing six Transfrontier Conservation Areas with its neighbours (Box 20). Management of protected areas is undertaken by a national conservation agency, SANParks, as well as provincial conservation agencies and departments. The important role of local communities in protected areas has been recognised and efforts are being made to involve them in management of these parks through co-management agreements and to provide for access and benefit sharing through initiatives such as People & Parks (Box 10) and projects at the park level.

2.8.5. Impact Assessment

Paragraph 5 of COP 8 Decision VIII/28 urges parties to apply voluntary guidelines on biodiversity-inclusive environmental impact assessment, as appropriate, in the context of implementing paragraph 1(a) of Article 14 of the CBD and of target 5.1 of the provisional framework of goals and targets towards 2010, and to share their experiences, *inter alia,* through the clearing house mechanism and national reporting. Paragraph 1 (a) of Article 14 of the CBD requires parties to introduce appropriate procedures requiring environmental impact assessment of proposed projects that are likely to have a significant adverse effects on biodiversity with a view to avoiding or minimising such effects and where appropriate, to allow for public participation in such procedures.

South Africa formally commenced environmental impact assessments (EIAs) in 1997 when regulations under the Environment Conservation Act, No. 73 of 1989, were promulgated. These regulations were replaced in 2006 by new EIA regulations under the National Environmental Management Act, No. 107 of 1998 (NEMA). NEMA identifies the objectives of integrated environmental management as being to:

- promote the integration of the principles of environmental management set out in NEMA into the making of all decisions which may have a significant effect on the environment. (In this regard, one of the NEMA principles is that sustainable development requires, *inter alia,* that the disturbance of ecosystems and the loss of biodiversity are avoided, or where they cannot altogether be avoided, are minimised and remedied);
- identify, predict and evaluate the actual and potential impact on the environment, socio-economic conditions and cultural heritage, as well as the risks, consequences, alternatives and options for mitigation of activities, with a view to minimising negative impacts, maximising

benefits, and promoting compliance with the principles of environmental management set out in NEMA;
- ensure that the effects of activities on the environment receive adequate consideration before actions are taken in connection with them;
- ensure adequate and appropriate opportunity for public participation in decisions that may affect the environment;
- ensure the consideration of environmental attributes in management and decision-making which may have a significant effect on the environment;
- identify and employ the modes of environmental management best suited to ensuring that a particular activity is pursued in accordance with the principles of environmental management set out in NEMA.

The regulations contain procedures to be followed in the EIA process, including public participation, and also specify "listed" activities which, depending on their nature and associated risk, require either a basic assessment report or a full assessment including scoping and EIA. In the absence of an environmental authorisation, these activities may not be undertaken. DEAT at a national level and the nine provincial environmental departments are the competent authorities mandated to consider and decide on applications under the regulations. In considering an application, the competent authority is required to take into account several relevant factors, including the impact on the environment and measures to protect the environment or to prevent, control, abate or mitigate environmental impacts or degradation. The competent authority is also required to monitor compliance against the conditions of the authorisation.

In addition, **Environmental Management Frameworks** (EMFs) are a strategic tool that was introduced in the new NEMA EIA regulations in 2006. EMFs are a compilation of information and maps that specify the attributes of the environment in a particular geographic area that, once adopted by a provincial environmental Minister, must be taken into account in the consideration of applications for environmental authorisation in the area to which the EMF applies. The EMF must, *inter alia*, specify the sensitivity or conservation status of environmental attributes in a particular area, state the environmental management priorities of the area, and indicate which activities would be incompatible, or not, with specified areas. One of the primary functions of EMFs is to provide applicants with an early indication of the areas in which it would be potentially appropriate, or inappropriate, to undertake an activity listed in terms of the NEMA EIA regulations.

Challenges have been experienced with the EIA process, discussed briefly below.

DEAT, as the responsible government authority, has recognised that there are certain problems in the execution and administration of EIAs in South Africa, and has identified the following priorities for environmental impact management (DEAT 2008d):

- implementing and amending the EIA regulations and NEMA provisions,
- developing and implementing a comprehensive environmental management strategy and action plan including:
    - reviewing effectiveness and efficiency of the EIA system,
    - rationalising the EIA system by introducing more appropriate tools,
    - integration of environmental impact management in other legislative processes such as land planning,
    - promoting self-regulation,
- developing integrated EIA support system,
- establishing adequate EIA governance through:
    - training,

    - procedural and technical guidelines,
    - organisational structures and guidelines,
    - decision support tools for provinces,
    - financial and technical assistance for backlogs,
- building EIA capacity amongst external stakeholders, and
- transforming the EIA practitioner industry.

DEAT commissioned a study to review the effectiveness and efficiency of the EIAs. The first draft of the study was released for public comment in November 2008 (Mosakong 2008). While this report is not yet finalised, the pertinent findings from the preliminary report are summarised below.

Many stakeholders, for different and sometimes conflicting reasons, expressed scepticism with the EIA process. Lack of political will and commitment to environmental management as well as political interference with the EIA process was highlighted, as were concerns regarding the resources and capacity of government to manage the process effectively and efficiently. While EIAs are intended to serve as a tool that supports sustainable development, they are seen to generally focus on administrative compliance and in practice serve to motivate activities rather than to assess whether such activities should be permitted. A major shortcoming identified is that biodiversity considerations are usually inadequately reflected in the EIA process, especially with respect to how the local site-specific issues impact on the broader/regional biodiversity context.

The draft report goes on to make a number of recommendations. Of interest is that the need to mainstream environmental objectives and targets in the policies of all government departments is recognised. A more strategic and holistic approach to EIAs is recommended, with activities categorised in terms of their strategic importance, with a focus on those activities that have potentially significant impacts. Likewise, instruments should be developed to focus on sites that are environmentally sensitive. The final recommendations from the review will only be available later in 2009 once the draft report has been finalised following public comments. The extent to which the recommendations have been adopted will be reported in the future. The draft report supports EIAs as a tool for mainstreaming environmental matters, and particularly biodiversity, at both a strategic and project-specific scale.

Substantial work has been done in South Africa on incorporating biodiversity considerations in the EIA process, with several tools developed to support this. See section 3.4 for more detailed discussion.

3. MAINSTREAMING BIODIVERSITY

3.1. Introduction

Mainstreaming biodiversity can be viewed as the incorporation and integration of biodiversity as an important aspect of planning, decision-making, land-use and production methods to achieve sustainable development, particularly in those sectors whose core business is not biodiversity conservation. Factors that contribute to successful mainstreaming of biodiversity include good scientific information and understanding; institutional capacity and commitment; strategic cross-sectoral and public-private partnerships; and a willingness by the scientific and biodiversity community to take advantage of opportunities to demonstrate that biodiversity-friendly policies can provide socio-economic opportunities for the poor (Pierce *et al.* 2002).

Although it still faces challenges, South Africa is making good progress towards mainstreaming biodiversity in both the public and private sectors. This chapter examines the successes achieved and challenges faced. This is done by firstly describing the cross-sectoral co-ordination measures (section 3.2). Thereafter, the extent to which South Africa has adopted the ecosystems approach is summarised (section 3.3), and mainstreaming biodiversity in land-use planning and decision-making (including environmental assessment) is discussed (section 3.4).

3.2. Cross-sectoral co-ordination

The responsibility for managing and conserving biodiversity cuts across several national, provincial and local government departments as well as government agencies, NGOs, the private sector and communities. For the fragmented and decentralised model to be effectively implemented, cross-sectoral co-ordination is essential. The measures that South Africa has taken in this regard are summarised in this section. This is done by firstly providing an overview of the biodiversity management framework and then discussing the cross-sectoral planning mechanisms and co-ordinating structures. Cross-cutting national plans and strategies are then described. The section concludes by assessing progress of the measures in cross-sectoral co-ordination.

3.2.1. Overview of biodiversity management framework

The management of biodiversity in South Africa is guided primarily by the White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity (DEAT 1997) ("the White Paper on Biodiversity"). This policy document was informed largely by the commitments assumed when South Africa become a signatory to the CBD in 1995.

South Africa has three spheres of government – national, provincial and local – with the powers and functions of each sphere set out in the Constitution. Responsibility for management of biodiversity is allocated between various government departments and agencies at the national, provincial and local level (Table 3-1). Certain functions are exclusive national, provincial or local government competences, while other functions are concurrent competences. Most functional areas of relevance to the conservation and use of biodiversity are set out in Schedule 4 of the Constitution, which describes functional areas of concurrent national and provincial legislative competence. These concurrent responsibilities include many functional areas relevant to the conservation and use of biodiversity such as agriculture, environment, nature conservation, pollution control, regional planning and development, soil conservation, urban and rural development, and tourism. National competences of relevance include land reform, water resources, forest resources, marine resources and national parks and botanical gardens.

Table 3-1: Organs of state with environmental management responsibilities and their functions (DEAT 2008c)

Sector	Responsibilities
Environmental Affairs and Tourism	Air quality, pollution control and waste management, environmental impact management, biodiversity conservation, marine and coastal management
Water Affairs and Forestry	Water resources, water services, veld, forests and forestry, mountain catchments
Agriculture	Agricultural resources, pests, regulation of fertilizers, farm feeds, and agricultural remedies, GMOs, aquaculture, animal breeding
Land Affairs	Development facilitation and principles governing land development, land use
Provincial and Local Government	Municipal planning, integrated development plans, municipal service delivery, disaster management
Science and Technology	Research support
Arts and Culture	National heritage, including World Heritage Sites and museums
Education	Education and research
Health	Hazardous substances
Minerals and Energy	Access to minerals and petroleum resources, nuclear energy, mine-related health and safety
Transport	Maritime law, movement of substances, harbours

DEAT, SANBI, SANParks, DWAF, World Heritage Site Authorities and provincial conservation agencies are organs of state whose core business includes biodiversity conservation. SANParks, the provincial conservation agencies, and in the case of three provinces, the provincial environment affairs or conservation department, manage protected areas. The management of biodiversity outside of protected areas is the responsibility of either the provincial environment affairs or conservation department or the provincial conservation agency, depending on the provincial legislation. Apart from these institutions whose core business is biodiversity, there are several other national, provincial and local organs of state whose policies, programmes and decisions impact directly on how South Africa's biodiversity is managed. Local government is responsible for:

- Implementing the environmental policies, plans and programmes of national and provincial government,
- Ensuring alignment between its IDPs and provincial Environmental Implementation Plans,
- Ensuring that IDPs comply with NEMA principles.

The allocation of biodiversity management responsibilities makes co-operative governance between the national, provincial, and local spheres of government essential for effective implementation. Co-operation between different national government departments is also important as biodiversity issues are of relevance to virtually every government institution. Measures implemented to facilitate this co-operation are discussed in the following sections.

3.2.2. Cross-sectoral biodiversity co-ordination

The White Paper on Biodiversity recognises that to implement the CBD successfully requires integration of the conservation and sustainable use of biodiversity into relevant sectoral or cross-sectoral plans, programmes and policies.

A key objective of NEMA is to establish institutions that promote co-operative environmental governance and procedures for co-ordinating environmental functions exercised by all organs of state. DEAT is the lead agent in environmental governance and is thus responsible for:

- Establishing national environmental norms and standards,
- Ensuring compliance with national policy, laws, norms and standards on environmental management,
- Establishing procedures to review the environmental impacts of government policies, plans and programmes.

Chapter 3 of NEMA provides for procedures for environmental governance and requires national departments that exercise functions that may impact on the environment to prepare Environmental Implementation Plans (EIPs), while those national departments that exercise functions involving management of the environment are required to prepare Environmental Management Plans (EMPs) which must be updated every four years. These EIPs and EMPs have recently been updated in 2008. Departments whose activities may impact on the environment and need to produce EIPs are listed in Schedule 1 of NEMA as being the Departments of Agriculture, Defence, Environmental Affairs and Tourism, Housing, Land Affairs, Trade and Industry, Transport, and Water Affairs and Forestry. Departments with responsibilities for managing the environment and which need to produce EMPs are listed in Schedule 2 of NEMA as being the national Departments of Environmental Affairs and Tourism, Health, Labour, Land Affairs, Minerals and Energy, and Water Affairs and Forestry, as well as all nine provinces. DEAT is required to monitor compliance with the EIPs and EMPs, while each province must ensure that municipalities in that province comply with the relevant provincial EIP. Annual reports on progress in implementing the plans should be produced. In practice, most EIPs and EMPs tend to consider biodiversity weakly.

For South Africa to manage its biodiversity effectively and meet its obligations under the CBD requires the participation and co-operation of various national departments. These national departments as well the various provinces should incorporate relevant biodiversity issues into their strategic and annual implementation plans and allocate appropriate budgets for biodiversity management activities.

DEAT plays a central co-ordinating and monitoring role for the sector. The following intergovernmental structures are of relevance to biodiversity management:

- **Director-General clusters**. The various national departments are clustered into the following areas – Economic and Employment; International Relations, Peace and Security; Social Sector; Governance and Administration; and Justice, Crime, Peace and Security. DEAT's environmental programmes require integrated implementation across these clusters, although DEAT has recognised the need for a cluster that focuses on the environment to ensure integration into the policies and programmes of all three spheres of government;
- A ministerial forum (**MINMEC**) promotes co-operative governance between the national line function minister and his or her provincial counterparts. MINMEC comprises the Minister and Director General of DEAT and the provincial ministers / Members of Executive Councils (MECs) for environmental affairs;

- MINMEC is supported by the technical committee (**MINTECH**) and interaction with the provinces takes place through this structure which was established to facilitate co-ordination between DEAT and the provincial environmental departments. MINTECH comprises the Director General of DEAT, representatives of SANBI and SANParks, and the heads of department responsible for environmental management and biodiversity conservation in the provinces;
- Four **Working Groups** have been established under MINTECH with Working Group 1 focusing on biodiversity and heritage. DEAT co-ordinates this working group;
- The **Committee for Environmental Co-ordination** (CEC) was established under NEMA to promote co-operative governance and procedures for co-ordinating environmental functions exercised by all organs of state. However, this structure no longer functions and is in the process of being disbanded under an amendment to NEMA.

An assessment of how effectively these co-ordinating structures are functioning is provided in section 3.2.4.

3.2.3. Cross-cutting national plans and strategies

Since 1994 South Africa has strived to create a democratic society based on the principles of equity, non-racialism and non-sexism. Policies and programmes have been developed to improve the quality of life of all South Africa's people, with poverty alleviation as a fundamental aim. At the same time, the country is part of the global community and has committed itself to several international priorities through participation in various forums and being party to multi-lateral agreements.

To give effect to the above, South Africa has developed a number of cross-cutting national plans and strategies. Important plans and strategies specific to biodiversity have already been highlighted in Chapter 2, with other cross-cutting polices being the White Paper on Sustainable Forest Development in South Africa (1996), the National Water Policy (1997) and the White Paper for Sustainable Coastal Development in South Africa (2000). Other relevant plans and strategies are the National Framework for Sustainable Development in South Africa, the Anti-Poverty Strategy and the Millennium Development Goals, summarised below from a biodiversity perspective.

National Framework for Sustainable Development in South Africa

In July 2008, DEAT published the National Framework for Sustainable Development (NFSD) (DEAT 2008a). The purpose of this framework is to set out South Africa's national vision for sustainable development and specify strategic interventions to re-orientate South Africa's development path in a more sustainable direction. It proposes a national vision, principles and areas for strategic intervention. The NFSD will provide the basis for the development of a national sustainable development strategy and action plan. This action plan and the mobilisation of resources will take place in the second phase of the process, while the third phase will involve the roll-out, implementation, monitoring and review of the action plan.

The NFSD vision is as follows:
"South Africa aspires to be a sustainable, economically prosperous and self-reliant nation state that safeguards its democracy by meeting the fundamental human needs of its people, by managing its limited ecological resources responsibly for current and future generations, and by advancing efficient and effective integrated planning and governance through national, regional and global collaboration" (DEAT 2008a, page 8).

The framework identifies five strategic priority areas for action and intervention that are necessary to reach the desired state of sustainable development:

- Enhancing systems for integrated planning and implementation,
- **Sustaining ecosystems and using natural resources efficiently**,
- Economic development via investing in sustainable infrastructure,
- Creating sustainable human settlements,
- Responding appropriately to emerging human development, economic and environmental challenges.

The NFSD thus recognises the inter-connection between ecosystems, natural resources and sustainable development and that South Africa's biodiversity provides a basis for economic growth and development, with specific examples cited including: marine resources as a basis for the fishing industry; rangelands that support commercial and subsistence farming; indigenous species form the mainstay of the horticultural and agricultural industries; the tourism industry that relies on the diversity and abundance of wildlife and heritage; natural landscapes as backdrops for the film industry, and indigenous plants for the medicinal industry.

Within the context of the development priorities identified, the NFSD proposes that interventions and actions be undertaken in respect of the following environment-related areas:

- **Value of ecosystems**: recognising that ecosystem functioning is critical to achieve sustainable development, it is suggested that awareness and understanding of the value of ecosystems is raised and improved in all sectors of society so that the co-dependencies of social systems and ecosystems be recognised. The quantification and monitoring of the value of ecosystem services to the economy and lives of people needs to be internalised in production and consumption costs and prices and incorporated in relevant planning and budgeting processes.
- **Improving aquatic ecosystems**, specifically water availability and water quality.
- Investing in **protecting and enhancing ecosystem services**.
- **Dematerialising the economy**. This refers to improvements in the efficiency of production and consumption systems by reducing the quantity of materials and energy per unit of production and reducing to zero the waste outputs that are predominantly disposed of in landfills, air, marine and aquatic systems.
- **Air quality** enhancement and monitoring through investment in clean technologies.
- **Energy efficiency.**
- **Food security and natural-resource based livelihoods.** This includes a national soil rejuvenation programme.
- **Economic and fiscal instruments** as incentives for environmental reform in support of sustainable development**.**
- **Implementation of international agreements**.

The NFSD therefore incorporates biodiversity-related matters as prominent factors that will need to be included in the national sustainable development strategy and action plan to be drafted during the next phase of the process. If implemented in line with the framework, these measures will support biodiversity and achievement of the CBD goals.

Anti-Poverty Strategy

In October 2008, South Africa released a draft discussion document *Towards an Anti-Poverty Strategy for South Africa (*Republic of South Africa 2008). This document seeks to create a strategy to eradicate poverty by creating economic opportunities and enabling or empowering communities or individuals to access these opportunities. The strategy will support government's aim to create "a better life for all". The document has been released for public comment and consultations are underway, whereafter it will be finalised and the programme of action implemented.

The draft strategy identifies nine pillars for poverty reduction. Pillar eight is environmental sustainability, recognising that strategies and programmes are required to link economic opportunities for the poor to the protection and rehabilitation of ecosystems, reversing environmental degradation and promoting eco-tourism.

Millennium Development Goals

South Africa has adopted the Millennium Development Goals (MDGs). A full review of progress towards meeting these goals will not be presented in this report. However, Target 9 of Goal 7 of the MDGs is relevant to biodiversity as it requires integration of the principles of sustainable development into policies and programmes and reversing the loss of environmental resources. The indicators for environmental sustainability are the proportion of land area covered by forest, percentage of area protected to maintain biological diversity, energy used (kg of oil equivalent per $1 000 of GDP), and carbon dioxide emissions per capita.

The progress towards meeting this target is difficult to assess. Elsewhere in this report, the extent to which biodiversity and sustainable development have been incorporated into policies and programmes is highlighted. In general, such integration has been done at a policy level (see discussion on NBSAP in section 2.3.1 and NFSD above for example) and is also happening at the implementation level (see bioregional and ecosystem programmes in section 3.3.2). A general observation is that progress is being made in this regard in South Africa.

With respect to the quantitative indicators, the following observations are made:

- The proportion of South Africa that is formally protected area is 6.5% (DEAT & SANBI 2008), while the MDG goal is 10% by 2015. The National Protected Area Expansion Strategy is discussed in section 2.5.2 and the progress and challenges are highlighted there. South Africa has a protected area target of 8.7% by 2013 and 12% by 2028.
- The proportion of land area covered by forest in South Africa is naturally very small, with the indigenous forest biome (as opposed to forestry plantations) making up less than one percent of the country's surface area. Despite their small surface area, forests make a disproportionably high contribution to the conservation of South Africa's biodiversity (Geldenhuys & MacDevette 1989), being second only to fynbos in terms of plant species richness per unit area (Gibbs Russel 1985). In addition, they provide essential habitat to at least 10% of all South Africa's IUCN red listed vertebrate species (EWT 2002). Globally, South African forests are recognised as having the highest tree diversity of any temperate latitude forest, with between three and seven times more tree species than other forested areas of the southern hemisphere, this despite covering the smallest area in comparison to other counties.
- There are not sufficient data to report on progress on the energy and carbon emissions indicators.

3.2.4. Progress on cross-sectoral co-ordination

Although the policies, legislation and structures for cross-sectoral planning and co-ordination, as summarised above, are generally in place, in practice co-ordination efforts have fallen short of expectations. Specific observations in this regard are as follows:

Plans

- Relevant national government departments are required by NEMA to have submitted updated EIPs and EMPs during 2007. The Minister of Environmental Affairs & Tourism granted an extension of a year and these plans were prepared and submitted during 2008.
- In spite of these plans having been prepared and submitted, there are concerns regarding the seriousness with which many departments treat the plans, with the perception being that they are often prepared as a compliance measure rather than being seen as part of the department's core functions, with implementation of the plans lacking. This is reflected by the fact that many departments do not have a "focal point" for environmental/biodiversity matters, nor do they include biodiversity in their annual plans or allocate budgets to biodiversity-related activities.
- Progress reports on the EIPs and EMPs should be prepared annually, but there is general non-compliance with this requirement.

Co-ordination and co-operation

- An internal report by DEAT during 2007 concluded that the Committee for Environmental Co-ordination (CEC) was not an effective body. This CEC was intended to be the key forum to promote the integration and co-ordination of environmental functions by the relevant organs of state and to promote the objectives of the EIPs and EMPs as it consisted of the Director Generals of ten national departments are was chaired by the Director General of DEAT. Although required to meet four times each year, the CEC had not met since 2005. A decision has been taken to abolish the CEC. An amendment to NEMA has been passed to implement this and in terms of the amended legislation, the Minister may establish any forum or advisory committee and determine its composition and functions as required.
- Working Group 1 of MINTECH is an important forum for co-ordinating biodiversity management between national and provincial government. Although it meets quarterly and is functioning, the general view is that this body could play a stronger leadership role to co-ordinate the efforts of the biodiversity sector.
- While there are examples emerging of structures being established to facilitate co-operative governance (see Box 12), there are also instances of lack of communication between different government departments which impact on biodiversity. An example of such lack of communication is that the Department of Minerals & Energy has in some cases issued prospecting permits for mining in protected areas or other important biodiversity areas such as forests, without consulting with the other relevant departments. Lack of co-ordination between DEAT, the provincial environmental authorities and DWAF is also noted in development applications that require both a water license from DWAF and environmental authorisation from the environmental department of DEAT or the provinces, as these processes run in isolation from each other. A better integrated approach could facilitate enhanced decision-making in the interests of biodiversity.

Box 12: Co-operative governance in development planning in the North West Province

In recent years a plethora of economic and development related legislation, as well as policy and strategy frameworks (initiated by all three spheres of Government), impacted on the North West Province's spatial environment. Examples include:

- The National Spatial Development Perspective 2006 (NSDP),
- The North West Provincial Growth and Development Strategy (NW GDS 2005),
- The review of various District and Local IDPs, growth strategies and SDFs,
- The North West State of the Environment Report 2002,
- THE NBSAP 2005.

An analysis of these documents clearly points to the need for a common understanding of provincial spatial structuring challenges, relating to economic, social and environmental areas of significance and the interconnection thereof.

In the North West Province it was realised that the only way to ensure environmental protection (including biodiversity) in planning processes, is to integrate environmental and biodiversity priorities into existing spatial planning processes of municipalities. A very close working relationship was therefore established between the North West Department of Agriculture, Conservation and Environment and the North West Department of Developmental Local Government and Housing, South African Local Government Association of the North West, the Office of the Premier and IDP managers of municipalities. All these parties, together with other provincial departments and national departments meet quarterly as the **North West Development Planning Forum**, to ensure integration and harmonisation of plans, strategies and policies to strengthen the municipal IDP processes (including Spatial Development Frameworks). This forum was thus established to support co-operative governance.

Furthermore, the North West Province has drafted a provincial Land Use Management Bill (still to be gazetted for comment) which provides for the integration of environmental issues into any land-use decision-making processes to ensure ecologically sustainable development. This Bill requires that a Provincial Spatial Development Framework (PSDF) be developed every five years. This PSDF must be informed by the provincial Biodiversity Conservation Assessment. It is also required that all municipal SDFs be aligned to the PSDF. The implication is that all important biodiversity areas, corridors and protected areas will be reflected in the municipal SDFs to ensure the protection of areas that are of environmental importance. The municipalities are very willing to join forces on this new way of compiling SDFs and in this way, environmental and biodiversity concerns can be covered early on in the planning stages and not only at the project specific level through EIAs and Environmental Management Plans.

The relevant authorities are aware of the shortcomings in the cross-sector co-ordination highlighted above and steps have been identified to improve the situation. In addition to the co-ordination between organs of state, the White Paper on Biodiversity recognises the limited capacity of government to implement biodiversity policy and that support is needed by government by entering into partnership arrangements. Such partnerships are required between organs of state, non-governmental organisations (NGOs), community-based organisations, holders of traditional knowledge, the private sector, the scientific community and private individuals and structures and mechanisms to integrate and co-ordinate the efforts of the various parties need to be established. The National Freshwater Biodiversity Collaboration (NFBC) has been proposed and is an example of a cross-sector collaborative initiative (Maree 2007) (Box 13). The NFBC is being taken forward as part of SANBI's newly established Freshwater Programme (see section 3.3.2), which will provide the secretariat function for the NFBC.

Box 13: National Freshwater Biodiversity Collaboration (Maree 2007)

The responsibility for managing, using and conserving freshwater biodiversity includes several national, provincial and local government departments and institutions as well as other stakeholders such as NGOs and local communities. The fragmentation of responsibility and accountability is reflected in the state of research and implementation related to the management, use and conservation of freshwater biodiversity, where people are often working in isolation from each other.

It is in this context that the National Freshwater Biodiversity Collaboration (NFBC) has been proposed as a collective forum for co-operation, idea sharing and networking amongst researchers, managers, funders and implementers who have an interest in freshwater biodiversity. Participation is voluntary and intended to support rather than hinder current or potential projects.

The co-ordination of the NFBC will be the responsibility of a secretariat to be housed at SANBI, as part of SANBI's recently established Freshwater Programme. An inclusive and representative Steering Committee will be established. Funders' commitments to the NFBC will be obtained by way of Memoranda of Understanding.

The objectives of the NFBC are:

- To provide a forum for funders and implementers to align their investments and efforts in the management and conservation of freshwater biodiversity;
- To provide a forum for partners (researchers and other stakeholders) to share information, knowledge and best practices with implementers, and to get input from implementers on needs and priorities;
- To provide access/links to objective, independent, credible information on freshwater biodiversity-related matters;
- To provide and promote opportunities and mechanisms for capacity building including: raising awareness at various levels from the public to senior government officials; training at technical, specialist and management levels; and development of information material packaged appropriately for different audiences.

3.2.5. Linkages with other UN Conventions

Climate change

Climate change has been identified as a threat to South Africa's biodiversity (see section 1.4). Several biodiversity-related policies recognise this threat and suggest appropriate responses. For example, the NBSAP's Outcome 4 of Strategic Objective 3 is "an integrated national programme facilitates adaptation to the predicted impacts of climate change on biodiversity across the landscape and seascape" (DEAT 2005a page 89). The NBF also recognises the climate change threat and Priority Action 15 is to develop and implement an integrated programme for ecosystem adaptation to climate change, with an emphasis on ecosystems vulnerable to climate change impacts (DEAT 2007a). The NPAES places strong emphasis on increasing resilience to climate change as a core goal for protected area expansion (DEAT & SANBI 2008).

From the above it is clear that climate change has been recognised as a threat in the biodiversity planning process. In addition, South Africa has demonstrated a commitment to addressing climate change and became a signatory to the United Nations Framework Convention on Climate Change (UNFCCC) in 1997 and since then has participated actively in the UNFCCC and the Kyoto Protocol. South Africa developed a National Climate Change Response Strategy (DEAT 2004) with the objective of supporting the principles of the White Paper on Integrated Pollution and Waste Management as well as other national policies including those relating to energy, agriculture and water. The response strategy recognises the importance of biodiversity in maintaining ecosystem functioning, its economic value for tourism and its role in supporting subsistence lifestyles, while also noting that plant and animal biodiversity (together with the health, maize production, rangelands and water resources) are amongst the most vulnerable sectors to climate change (DEAT 2004). The strategy suggests several interventions, including some that are directly or indirectly related to biodiversity management – water resource management and contingency planning, adaptation of rangeland practices, changes in forestry practices and protecting plant, animal and marine biodiversity. However, the strategy does not focus strongly on ecosystem adaptation to climate change, and does not emphasise the role that intact natural ecosystems can play in increasing resilience to the impacts of climate change, by allowing ecosystems and species to adapt as naturally as possible to the changes and by buffering human settlements and activities from the impacts of extreme climate events. This shortcoming is recognised in the NBF which prioritises an integrated national programme to facilitate adaptation to the predicted impacts of climate change on biodiversity across

the landscape and seascape, with an emphasis on vulnerable ecosystems, especially freshwater systems, and sustainable livelihoods.

Climate change continues to receive attention with the Long Term Mitigation Scenarios (Scenario Building Team 2007) approved by cabinet during 2008. This will be used to develop an implementation plan and South Africa's National Climate Change Policy.

Desertification

Desertification is not only about the spread of deserts, but refers to land degradation in arid, semi-arid and sub-humid climates, which cover 91% of South Africa (DEAT 2005c). Land degradation is the persistent decrease in the supply of ecosystem goods and services as a result of changes in soil or vegetation, and includes deforestation and the effects of drought.

South Africa ratified the United Nations Convention to Combat Desertification (UNCCD) in 1997. A national action programme to combat land degradation and alleviate rural poverty has been developed (DEAT 2005c). This action plan clearly recognises and responds to the strong linkages between desertification, biodiversity and climate change, noting that South Africa should co-ordinate and have a synergistic approach to implementation of the three conventions.

3.2.6. Cross-cutting programmes and projects

Various multi-sectoral programmes have been initiated either at an international level or within South Africa that support the objectives of the CBD, with many of them linking biodiversity conservation with socio-economic development in line with government's social objectives. They also present important opportunities to mainstream biodiversity considerations in developmental planning, capacity building and community empowerment. The programmes generally involve a number of different government departments in all three spheres of government and include initiatives with a development or social emphasis (Box 14). Over and above the bioregional and ecosystem programmes (summarised in 3.3.2) and the cross-cutting programmes in Box 14, other programmes with a conservation emphasis include:

- People and Parks
- Large Marine Ecosystem Programmes including the Benguela Current Large Marine Ecosystem (BCLME)
- Trans Frontier Conservation Areas (TFCAs)
- World Heritage Sites, of which South Africa has eight, with three of them inscribed as Natural sites (Cape Floristic Region Protected Areas, iSimangaliso Wetland Park and Vredefort Dome); one a Mixed site (uKhalamba Drakensberg); and the remaining four as Cultural sites (Fossil Hominid Sites of Sterkfontein and environs, Mapungubwe Cultural Landscape, Richtersveld Cultural and Botanical Landscape and Robben Island)
- Biosphere Reserves
- Blue Flag Beach Programme
- Business and Biodiversity Offset Programme (BBOP).

Box 14: Overview of programmes with cross-cutting biodiversity and socio-economic developmental focus

Expanded Public Works Programme (EPWP)
National government programme providing additional work opportunities and training / capacity building with aim to create one million jobs between 2004 and 2009 with focus on unemployed, particularly women, youth and disabled.

Social Responsibility Programme
DEAT's contribution to the national Expanded Public Works Programme addresses the department's core responsibilities of environmental management (including biodiversity) and tourism, while contributing to job creation, skills development, SMME development and the upliftment of households, especially those headed by women.

Integrated Sustainable Rural Development and Urban Renewal Programmes
A ten year government strategy that focuses on integrating existing programmes in the poorest 13 rural and eight urban nodes with the overall objective being to work together with communities and other partners to alleviate poverty and improve the quality of life in rural and urban areas through improved co-ordination and viable institutions that address social, economic, environmental and governance needs.

Working for Water
Programme managed by DWAF and aims to reduce the invasion of alien invasive vegetation, especially in river systems and catchments, while creating jobs, developing skills and creating secondary industries.

Working on Wetlands
SANBI manages the programme that aims to champion the protection, rehabilitation and sustainable use of wetlands through co-operative governance and partnerships. The focus is on re-instating the ability of wetlands to provide ecosystem services and using rehabilitation projects to create employment and build capacity.

Working on Fire
Managed by DWAF, this is a public private partnership aimed at promoting an integrated approach to fire management and involves collaboration between a number of national departments, statutory bodies, the private sector and civil society. As with other programmes, it aims to create employment and build capacity.

LandCare
A community-based, government-supported project aimed at combating desertification. Managed by the Department of Agriculture, it seeks to encourage and support sustainable land use practices, raise awareness and promote a resource conservation ethic while reducing poverty and creating jobs through natural resource rehabilitation, improvement and conservation.

CoastCare
Falling under the Marine & Coastal Management Branch of DEAT, this partnership between the private and public sectors promotes sustainable coastal development by supporting national and provincial priority projects, coastal community projects, education and training programmes and providing decision support materials.

3.2.7. Biodiversity initiatives in business and production sectors

There is recognition amongst South Africa's policymakers of inter-linkages between biodiversity and business and the need to mainstream biodiversity priorities into the policies, plans and activities across a range of stakeholders whose core business is not biodiversity, but whose day-to-day activities impact on biodiversity. This recognition is reflected in the NBSAP which includes several objectives and targets aimed at key production sectors, with agriculture, forestry and mining highlighted as production sectors with a significant impact on biodiversity. The NBF has as one of its Priority Actions to work with key production sectors to minimise the loss and degradation of natural

habitat in threatened ecosystems and critical biodiversity areas. The NBF identifies major sectors that are land and resource users as agriculture, aquaculture, property development, plantation forestry, mining, fisheries, and biofuels, and notes that these sectors have a role to play as custodians of the country's biodiversity. The planning frameworks therefore recognise the need to mainstream biodiversity into business practices. It is encouraging that the plans have resulted in action with initiatives being implemented in a number of sectors, as summarised below.

To reduce the pressure on biodiversity caused by the agriculture and fishing sectors, the biodiversity sector has in recent years established partnerships with a number of industries, with the initiatives aimed at enhancing sustainable production through the development and implementation of best-practice guidelines and other mechanisms. The guidelines seek to increase long-term productivity without compromising the environment while also contributing to socio-economic development. Mechanisms encourage biodiversity-friendly methods of production with the aim of reducing the loss of natural habitat, over-abstraction of water resources and over-harvesting of marine resources. The mechanisms involve labelling and certification schemes to accredit the production methods (Petersen 2007, GreenChoice 2008). While the costs of the initiatives, especially the costs of the biodiversity conservation measures, are initially partially funded by donors, they are increasingly being covered by the premium prices that producers are able to charge, especially in overseas markets – this involves participation in labelling and certification schemes or working through international trade organisations that accredit producers. The initiatives fit in at various stages along the value chain and involve appropriate market mechanisms (Box 15) (Petersen 2007). Most of these programmes have been initiated by NGOs or through the bioregional programmes such as C.A.P.E.

Consumers are also trending towards more environmentally responsible purchases, causing retailers to put pressure on suppliers to adopt environmentally-friendly practices. This pressure has resulted in market-leaders in the retail sector reviewing their supply chains and product procurement policies (GreenChoice 2008).

In response to the growing environmental awareness, the biodiversity sector launched GreenChoice in 2008. It is co-ordinated by WWF-SA and Conservation International, and supported by the Green Trust. The initiative was created to support the sustainable initiatives in the agricultural and marine sectors to secure ecosystem health, and its objectives are aligned to the NBSAP and the bioregional and ecosystem programmes. Its mandate is to reach out to both established and emerging business and biodiversity enterprises, facilitating assistance on technical issues related to biodiversity best practice as well as ensuring preferential market access and seeking to promote a suite of sustainable products. It is also tasked with creating a greater awareness of the environmental impacts of the production of food, flowers and fibres. It provides a platform for a concerted and creative effort from government, farmers, scientists, retailers and consumers to pursue broader product stewardship policies that support sustainable agriculture and fisheries. The GreenChoice initiative's functions include (GreenChoice 2008):

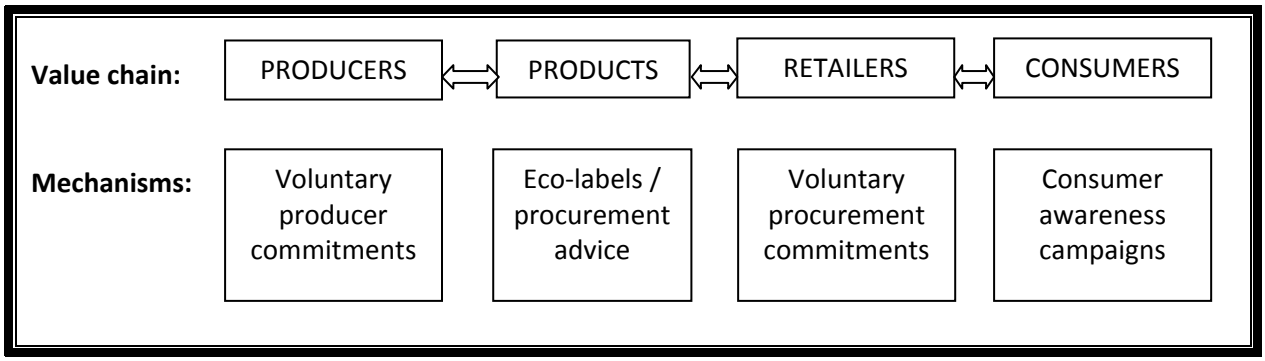
- Supporting the consolidation of existing and emerging projects that support biodiversity responsible production across the supply chain;
- Co-ordinating communication and lesson sharing between projects;
- Changing the way food is produced and consumed by focusing on the gate keepers of this process – the retailer and suppliers – and their purchasing and marketing departments;
- Creating awareness amongst consumers about biodiversity-responsible products and thus increasing market demand for such products;
- Lobbying government and industry bodies around the issues of sustainable production.

In preparation for COP 9, South Africa prepared a summary of the business case for biodiversity and good business practice (Petersen 2007), which provides an overview of biodiversity and business in South Africa and summarises the main established business and biodiversity initiatives. An overview of certain of the initiatives is provided below: wine (Box 16), fishing (Box 17), honey, indigenous cut flowers, sugar rooibos tea, and potatoes (Box 18). Apart from these, there are several other initiatives in the following sectors (Petersen 2007, GreenChoice 2008):

- red meat including ostrich,
- citrus,
- pecan nuts,
- tourism (including Fair Trade in Tourism),
- forestry (including Forestry Stewardship Council standards),
- mining (Mining and Biodiversity Forum established),
- wool,
- retail.

The initiatives are at different stages of development, but show good potential as there is a demonstrated level of support from the relevant industry sector bodies and participants in these sectors. The momentum that these initiatives are creating is encouraging and significant gains have been made, which will hopefully contribute to a new direction for biodiversity conservation in the country.

Box 15: Value chain and mechanisms for production sectors



Box 16: Biodiversity and Wine Initiative

South Africa is the world's eighth largest wine producer, with some 90% of the production taking place in the Cape Floristic Region, which comprises the highly threatened fynbos biome. The expansion of land under vines increased as export markets opened up for the wine producers, causing concern amongst conservationists.

In 2004, the wine industry and biodiversity sector formed a partnership in the Biodiversity and Wine Initiative (BWI), which developed biodiversity guidelines for the industry. The guidelines were designed to be practical and realistic to implement, but with maximum conservation benefits.

The BWI aims to prevent further loss of habitat in critical sites and increase the area of natural habitat in contractual protected areas. Farmers are assisted with assessing the biodiversity value of their land, implementing biodiversity guidelines and identifying unique marketing elements. Farming practices that enhance the suitability of vineyards and surrounding areas to biodiversity are promoted. Landowners who enter into a biodiversity agreement and establish a contract nature reserve may qualify for a property rates rebate of up to 100%.

One of the strategies is to identify and enlist interested producers as champions who will implement the guidelines, conserve critical ecosystems and incorporate a biodiversity experience into their winery experience.

Currently, BWI has 13 champions, ten co-operative cellar members and 112 members. This accounts for over 110 000 ha or almost 100% of the vineyard footprint in the Cape winelands. A BWI label, featuring a sugar bird on a protea, has been launched, which allows consumers to identify BWI member's wines.

The first phase of the BWI was funded primarily by CEPF with support from the Green Trust, the Botanical Society of South Africa, Wines of South Africa and Winetech.

Box 17: Fishing industry initiatives

In common with the rest of the world, there are concerns about the depletion of South Africa's marine fish stocks, with enforcement of laws often problematic. There is particular concern about linefish stocks where populations of many species are overexploited or even collapsed.

The **Southern African Sustainable Seafood Initiative** (SASSI) was developed by WWF-SA to inform and educate all participants in the seafood trade, from wholesalers, retailers, restauranteurs, caterers to consumers. The objectives are to promote voluntary compliance with the law through education and awareness, shift consumer demand away from overexploited species to more sustainable alternatives, and create awareness of marine conservation issues.

SASSI produces a species list, based on latest available research, as a fold-up wallet booklet. This classifies species as green (relatively healthy and well managed populations), orange (already overexploited or come from problematic fisheries), or red (may not be legally bought or sold in South Africa). In addition to the booklet, consumers can SMS a species to a dedicated number and receive an immediate reply on its category.

The SASSI initiative is housed by WWF-SA and funded by the Green Trust and Pick 'n Pay. A Restaurant Participation Programme allows two levels of participation – SASSI Aware (deals in green and orange listed species) and SASSI Champion (deals only in green listed species), with participants voluntary agreeing to adhere to a number of guidelines.

There is a recognised need to address value adding at the level of subsistence fisheries.

Box 18: Other sector initiatives

Honey industry
As a result of the large number of threatened honey badgers being caught in traps by bee-keepers, a partnership was formed in 2001 between the industry organisation, retailers, conservation authorities and three NGOs to address the problem. The initiative involves extension services to convince bee-keepers to adequately protect their hives, auditing adherence and providing accreditation to participating producers, with a sticker indicating honey as "badger friendly". The project was expanded to include all major fruit industries in the Western Cape.

Indigenous cut flower industry
The Agulhas Plain in the Western Cape is home to rich biodiversity but much of the natural vegetation has been replaced by vineyards and commercial farming. Flora and Fauna International, with the support of donors, created the Flower Valley Conservation Trust to take ownership of land, homesteads, flower processing plants and the export business. The goals of the trust are to conserve biodiversity, promote the sustainable use of fynbos and assist local communities to improve their quality of life. In order to build a viable commercial operation it was necessary to expand the business and develop a marketing strategy, and to

achieve this a partnership was entered into with a UK-based group of investors. A relationship was entered into with the UK supermarket chain, Marks & Spencer, and by mid-2006, 330 000 bouquets of fynbos had been sold in more than 200 stores, while creating 62 sustainable jobs in South Africa. Efforts are being made to build up the network of certified suppliers by working with 20 neighbouring farms and picking operations, with guidelines provided as well as training and marketing support. Work is being done with the Western Cape's provincial conservation agency, CapeNature, to develop an accreditation system for biodiversity-friendly harvesting practices.

Sugar industry
Sugar cane is noted for its heavy water consumption, impacting on wetlands, rivers and estuaries, while poor management practices lead to soil erosion and loss of habitat for animal species. Several parties, including government departments and agencies, the South African Sugar Association, SA Cane Growers and local grower's associations, have established the **Sustainable Sugar Initiative**, an environmental management system for sugar cane, which is being implemented in KwaZulu-Natal. The **Sustainable Sugarcane Farm Management System** is a management and extension tool to assist users to manage sugarcane farms in an economically, socially and environmentally sustainable manner. In 2006, WWF-SA and the South African Sugar Association signed an MoU which focuses on conserving freshwater and estuarine habitats and promoting biodiversity.

Rooibos tea
Tea made from the rooibos plant (*Aspalathus linearis)* has a growing market in South Africa and overseas as it contains healthy anti-oxidants and no caffeine. The area under cultivation, which falls within the Cape Floristic Region, increased from 14 000 ha in 1991 to 60 000 ha in 2006, threatening endemic plant and animal species. The Greater Cederberg Biodiversity Corridor and South African Rooibos Council commissioned the Rooibos Biodiversity initiative to generate a sustainable production strategy for the industry, while delivering economic opportunities and social benefits. The initiative includes a set of biodiversity guidelines, promoted through a system of champions, with implementation tied to an auditing and certification scheme. Joint research and planning for expansion is also undertaken.

Potato farming
Potato farming is a core economic activity of the Sandveld region in the Western Cape and falls within the Cape Floristic Region with important biodiversity including 65 rare and threatened plant species, 30 of which are endemic, as well as the Verlorenvlei wetland, a RAMSAR site. Ploughing the natural habitat for both potatoes and rooibos has made this the second most highly threatened ecosystem in South Africa, while un-permitted extraction of groundwater is also common. In response, a draft set of guidelines was released in 2007 as a joint initiative of Potatoes South Africa and CapeNature, with participation from retailers. The guidelines are aimed at stimulating greater awareness amongst producers and promoting responsible farming practices in support of biodiversity conservation. Sections include soil management, irrigation practices, fertilization practices and integrated pest management. Participation is voluntary with participants self-scoring themselves and submitting scores to an auditing agent. Record keeping is required on all inputs and outputs with a log of relevant activities. A three-tier system recognises best-practice that exceeds the legal requirements, with Candidate, Gold or Platinum status accorded to participants.

3.2.8. Fiscal incentives

CBD Article 11 requires each party, as far as possible and appropriate, to adopt economically and socially sound measures that act as an incentive for the conservation and sustainable use of biological resources. South Africa is making good progress towards adopting such incentives. The National Treasury is involved in a policy dialogue with the environmental sector on the role that market-based instruments, such as taxes and charges, can play in environmental fiscal reform. Existing environmental taxes, such as fuel, plastic bag, water and electricity levies, raise revenue but do little to improve the environment and are not earmarked for environmental purposes.

In 2006 National Treasury released a draft policy paper entitled *A Framework for Considering Market-Based Instruments to Support Environmental Fiscal Reform in South Africa.* The policy paper

outlines the role that market-based instruments, specifically environmentally-related taxes and charges, could play in supporting sustainable development in South Africa and outlines a framework for considering their potential application, with a focus on fiscal reform and the policies and measures capable of contributing to both the state's fiscal requirements and environmental objectives. Certain of the measures identified in the framework are in the process of being implemented.

The Protected Areas Act and the Biodiversity Act provide the legal basis and tools for protection of biodiversity by private landowners entering into partnership agreements to conserve their land for biodiversity. This can be achieved through Biodiversity Management Agreements in the Biodiversity Act or through the incorporation of private land into the protected area network through contractual Protected Environments or contractual Nature Reserves/National Parks in terms of the Protected Areas Act. The formal declaration of private land as part of the protected area network places restriction on the use of the land which has potential land value implications, and involves the landowner incurring management costs.

A set of mechanisms was introduced in the Revenue Laws Amendment Act, passed in December 2008 and effective from March 2009, to provide incentives for biodiversity conservation by private landowners and to promote conservation stewardship. In terms of the amendments, certain conservation management costs are tax deductible for taxpayers who have their land declared a protected area and enter into a contract agreement. The extent of the incentive applicable to a particular landowner is dependent on the level of security of the conservation agreement – more secure agreements which demand a higher level of commitment and cost from the landowner may qualify for substantial incentives (Box 19). The introduction of these fiscal incentives is of great importance for supporting the implementation of the National Protected Area Expansion Strategy (see section 2.5.2), which identifies contractual protected areas as a key mechanisms for protected area expansion.

Box 19: Fiscal incentives for biodiversity introduced in 2008, effective from 1 March 2009

Alien and invasive vegetation: Expenses incurred are to be allowed as a deduction for farming purposes. This applies to all farming activities and is not dependent on the area being subject to a biodiversity management agreement.

Biodiversity Management Agreement: Requires a minimum contract of five years. All conservation and maintenance expenses incurred under the agreement are treated as expenditure incurred in the production of income and for purposes of trade, and are thus deductible as an expense for tax.

Protected environment, nature reserve, national park: Requires a minimum contract period of 30 years. All conservation and maintenance expenses are deductible from taxable income.

Nature reserve or national park: Requires a minimum contract period of 99 years. In addition to the conservation and maintenance expenses above, the value of the land declared that is used only for conservation purposes can be deducted from the taxable income over a ten year period.

Additional biodiversity-related fiscal reforms under discussion are (DEAT & SANBI 2008):

- Reducing transaction costs associated with land acquisition for protected areas by exempting transactions from transfer duty, estate duty, VAT, capital gains tax and donations tax;

- Removing perverse incentives in municipal property rates, which actively discourage conservation, and developing property-rates based tools for willing municipalities to implement in order to encourage effective land management;
- Using EPWP funding as an incentive to encourage landowners to enter into contract agreements – this will provide assistance with rehabilitation by clearing invasive alien species and in wetlands as well as fire control.

3.3. Ecosystem approach

3.3.1. Overview

At COP 5 in 2000, the ecosystem approach was endorsed and it was recommended that parties apply this approach. The CBD defines the ecosystem approach as "a strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way. Application of the ecosystem approach will help to reach a balance of the three objectives of the Convention: conservation; sustainable use; and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources".

The COP 5 decision further notes that the ecosystem approach is based on the application of appropriate scientific methodologies focused on levels of biological organisation which encompass the essential processes, functions and interactions among organisms and their environment. It recognises that humans, with their cultural diversity, are an integral component of ecosystems. The approach requires adaptive management to deal with the complex and dynamic nature of ecosystems and an incomplete knowledge or understanding of their functioning.

South Africa has embraced the ecosystem approach, as reflected in its plans and implementation of its programmes. For example, the NBSAP recognises that ecosystem services underpin the economy and human well-being and responds directly in Strategic Objective 3: "Integrated terrestrial and aquatic management minimises the impacts of threatening processes on biodiversity, enhances ecosystem services and improves social and economic security".

The NBSAP outcomes and activities are drafted to support achievement of this objective. The NBF Priority Actions also reflect the importance of the ecosystem approach as many of these actions support this approach. The ecosystem approach is integral to the National Protected Area Expansion Strategy which recognises the important role that protected areas play in supporting functional ecosystems and the provision of ecosystem services.

It is not only at the planning level that the ecosystem approach is recognised, but more importantly programmes are designed and implemented with ecosystems and their functioning as a central component. South Africa has initiated several bioregional and ecosystem programmes in both the terrestrial and aquatic environments – these programmes are discussed in 3.3.2.

Moreover, South Africa is party to six Transfrontier Conservation Area (TFCA) initiatives that involves all six its neighbours (Box 20).

Box 20: Transfrontier Conservation Areas (TFCAs)

Kgalagadi Transfrontier Park
Bi-lateral agreement between South Africa and Botswana signed in 1999.

Greater Limpopo Transfrontier Park and Resource Area
Signed in 2002 between South Africa, Zimbabwe and Mozambique.

!A!-!Ais Richtersveld Transfrontier Conservation Park
Signed in 2003 with Namibia.

Maloti-Drakensberg Transfrontier Park and Development Area
Signed with Lesotho in 2001.

Lubombo Transfrontier Conservation Area
Protocol signed in 2000 with Swaziland and Mozambique. This TFCA comprises five separate initiatives under the protocol, four of which involve South Africa including the only marine TFCA (Ponto do Ouro-Kosi Bay Marine and Coastal TFCA).

Limpopo Shashe Transfrontier Area
Between South Africa, Zimbabwe and Botswana.

The TFCAs are jointly established with neighbouring countries and are contiguous protected areas or conservation areas across international boundaries where the responsible authorities agree to manage the area as an integrated unit under an agreed management plan. They can include both formal protected areas and conservation areas under private or communal ownership. Although the joint management objectives vary between the TFCAs, the biodiversity objectives are central and may include the removal of fences to open up migratory routes, the translocation of mammals and joint utilisation of natural resources, while socio-economic benefits such as the establishment of tourism with community involvement are also promoted. The TFCAs are still in the process of being implemented and face challenges such as cross-border security concerns including movement of tourists across international borders, unequal resources and levels of commitment between collaborating countries, unclear and under-capacitated institutional structures and general lack of human, financial and infrastructural (such as tourism facilities) resources. In spite of these challenges, progress is being made and many of the TFCAs are starting to deliver their objectives.

3.3.2. Bioregional and ecosystem programmes

South Africa has adopted a bioregional and ecosystem approach to conservation planning and implementation (Box 21), with a series of bioregional and ecosystem programmes in priority biomes under threat. These multi-stakeholder initiatives aim to secure the conservation of priority biodiversity within a specific biome or bioregion and include a high-level vision, strategy and action plan that co-ordinates several site-specific projects that address conservation, social and economic needs. The initial focus was on biodiversity hotspots, such as the Cape Floristic Region and the Succulent Karoo, but the initiatives have expanded to other important ecosystems such as grasslands, the marine environment and the freshwater environment. Although the programmes are at various stages of implementation, indications are that they are achieving successes in several ways.

Firstly, significant international funding, particularly from the Global Environment Facility (GEF), has been mobilised, and together with the local co-financing component has ensured there is a

considerable pool of funds available to initiate and undertake the programmes. Secondly, substantial resources and effort were allocated to the planning phase of the programmes. This involved consultations with a wide range of stakeholders from different departments in all three spheres of government, the private sector, civil society / NGOs and local communities. This participatory approach seems to have resulted in generally wide-spread support for the programmes. Thirdly, the programmes have been successful at integrating conservation and socio-economic objectives. Finally, the establishment of "independent" programme co-ordination units housed in SANBI has seemingly overcome potential problems with "ownership" of the initiative by a single agency.

Box 21: Overview of Bioregional and Ecosystem Programmes

Bioregional programmes are multi-sectoral partnership programmes aimed at conserving biodiversity in South Africa's most threatened biomes and ecosystems, making links with socio-economic development.

SANBI co-ordinates five bioregional programmes:

- Cape Action for People and the Environment (C.A.P.E.) in the fynbos biome
- Succulent Karoo Ecosystem Programme (SKEP) in the succulent karoo biome
- Grasslands Programme in the grasslands biome
- Marine Programme
- Freshwater Programme

Overall AIMS of Bioregional Programmes

- To promote the conservation of biodiversity both within and outside of protected areas
- To promote the sustainable use of natural resources and the development of sustainable livelihoods based on a biodiversity economy
- To strengthen partnerships, institutions and governance and continue to involve communities throughout the lifespan of the project
- To support implementation of projects and guide them to ensure that funds are optimised to achieve maximum conservation benefit

WHERE do bioregional programme operate?

- In priority threatened biomes or ecosystems (e.g. Cape Floristic Region, freshwater), identified through science
- In systematically identified spatial biodiversity priority areas throughout the landscape, not just in protected areas
- Operating at different spatial scales (e.g. whole biome, whole province, sub-biome corridor, district, local level)

WHAT do bioregional programmes do?

- Focus on priority actions for biodiversity needed in the biome, identified through science and stakeholder consultation
- Generally different for each biome (depends on e.g. which pressures on biodiversity are greatest)

HOW do bioregional programmes do what they do?

- Through pilot projects, demonstration models, testing and pioneering innovative new ways of doing things
- Through partnerships and networks with a range of organisations in the public, private and NGO sectors
- Using SANBI's capacity to convene, facilitate and co-ordinate, and to catalyse collaborative implementation among this range of partners
- With co-ordination units that play the role of strategy development, programme and project development, hosting knowledge networks, information sharing, fundraising, trouble shooting, linking with relevant international initiatives, capacity development, developing M&E frameworks, packaging information for various audiences, providing advice based on best available science, promoting biodiversity concerns in support of wise decision-making

- Generally similar across each biome

WHY do we have bioregional programmes?

- Impact (lessons rolled out, scaled up, contribute to policy development and implementation)
- Giving effect to SANBI's mandate in terms of the Biodiversity Act

The bioregional and ecosystem programmes are summarised briefly below.

Cape Action for People and the Environment (C.A.P.E.)

The C.A.P.E. programme seeks to conserve biodiversity in the Cape Floristic Region and adjacent marine environment while at the same time delivering benefits to the people of the region. The programme is focused on the fynbos biome of the Cape Floral Kingdom, which is the smallest of the world's six plant kingdoms with exceptionally high floral biodiversity, but is also highly threatened.

The stocktaking and strategy phase was initiated in 1998 with funding from the GEF and was co-ordinated by WWF-SA in partnership with government, communities and the private sector. The outputs of this phase identified key ecological patterns and processes that needed to be conserved as well as the threats and causes of biodiversity loss that needed to be addressed. A spatial biodiversity plan identifying the key areas that needed to be conserved as well as a broad programme of activities for a 20-year period were produced to serve as a basis for implementation of the programme.

SANBI is the programme manager for C.A.P.E. and hosts the co-ordination unit. Several stakeholders are formally involved and responsible for implementation of various components of the programme. These stakeholders include SANParks, the relevant provincial conservation agencies (CapeNature and Eastern Cape Parks), municipalities, NGOs, the private sector and academic institutions. Phase I of the 20-year, three-phase implementation is due to end in 2009. The phase is on track to achieve its objectives of expanding the area under conservation, removing barriers causing biodiversity loss and laying the foundations for a biodiversity economy.

Significant funding has been mobilised for the C.A.P.E. programme, with the following donor funds received to date:

- $12.5 million from the GEF for developing the initial C.A.P.E. Strategy, capitalising the Table Mountain Fund to act as a funding facility for ongoing work and supporting the project to develop the Cape Peninsula National Park (now the Table Mountain National Park);
- $11.3 million GEF funding for the C.A.P.E. Biodiversity Conservation and Sustainable Development Project;
- $3.1 million GEF funding for the C.A.P.E. Agulhas Biodiversity Initiative;
- $6 million from the Critical Ecosystem Partnership Fund (CEPF);
- $1.6 million CEPF consolidation grant.

Central to the C.A.P.E. strategy is a landscape-level approach to biodiversity conservation through landscape initiatives that include biodiversity corridors, mega-reserves and biosphere reserves. This landscape approach has been necessary due to the high diversity within the Cape Floristic Region where biodiversity changes rapidly from area to area – to conserve a representative sample of this biodiversity requires an approach that "collects" the remaining fragments of biodiversity from all over the landscape and links these together. The landscape-level approach facilitates the sustainable management of a mosaic of land uses where people live and work, but with the creation of corridors of continuous natural habitat across the landscape. These corridors include formal protected areas and high-value biodiversity on private land through biodiversity stewardship agreements. Landscape

initiatives under the C.A.P.E. programme include the Greater Cederberg Biodiversity Corridor, the Gouritz Initiative, the Garden Route Initiative, the Agulhas Biodiversity Initiative, the Baviaanskloof Megareserve, the Cape West Coast Biosphere Reserve and the Kogelberg Biosphere Reserve.

C.A.P.E. is a multi-faceted programme and is involved in conservation, development and related initiatives across a wide range of areas. The programme goal and strategic objectives are set out in Box 22.

Box 22: C.A.P.E. Programme goal and strategic objectives

Programme Goal

By the year 2020, the co-operation of capable institutions ensures that the biodiversity of the CFR is conserved, sustainably utilised and effectively managed, delivering significant benefits to the people of the region in a way that is embraced by local communities, endorsed by government and recognised internationally.

Strategic Objective 1: Effective Protection

An adequate and representative protected area network is secured and effectively managed.

This involves working towards the securing and effective management of an adequate and representative protected area network (incorporating terrestrial, freshwater and marine priorities). This may be through expanding state-owned protected areas or reaching formal agreements with private and communal landowners to protect their biodiversity through biodiversity stewardship.

Strategic Objective 2: Wise Regulation

Wise development, regulation and use of natural resources safeguards biodiversity.

This involves the wise development, regulation and use of natural resources in order to safeguard our biodiversity. This may be through effective water and land-use planning, decision-making and regulation or through business and biodiversity initiatives that work in production sectors.

Strategic Objective 3: Integrated Management

Integrated and co-ordinated management of natural resources ensures ecosystem integrity, resilience and functionality.

This involves integrated and co-ordinated management of aquatic and terrestrial natural resources to ensure ecosystem integrity, resilience and functionality. This may be through effective removal of invasive alien species and restoration, through sustainable land management, co-ordinated fire management or sustainable management of aquatic resources, including groundwater, rivers, wetlands, estuaries, marine.

Strategic Objective 4: Sustainable Benefits

The sustainable use of biodiversity delivers direct socio-economic and cultural benefits to local communities.

This involves the sustainable use of biodiversity resources to deliver socio-economic benefits for local communities, and particularly marginalised groups. This may be through opportunities for small business development in nature-based tourism or products made from sustainably harvested natural resources, or job creation and skills training through alien clearing, restoration in priority sites or developing infrastructure for nature-based tourism.

Strategic Objective 5: Capable Institutions

The required enabling environment is established and sustained.

This involves building and sustaining an enabling environment (including institutional and professional capacity, policy and legal framework, strategic and operational alignment, and stakeholder support) for effective biodiversity conservation. This may be through developing policies and legislative instruments,

through building the capacity of partner institutions to carry out their mandates, or though developing effective arrangements for co-operative governance and stakeholder participation.

Strategic Objective 6: Shared Knowledge

An established managed network for learning and research underpins the programme and informs policy, planning and practice.

This involves establishing a managed network for learning and research to underpin the partnership programme and to inform policy, planning and practice. This may be through a co-ordinated research programme, a more effective understanding of the benefits accrued to society by ecosystem services, or the facilitation of networks to share lessons learnt, solve problems collectively and develop best practice.

To support C.A.P.E.'s strategic objectives, a range of projects and activities have been initiated. The list below provides examples of the types of projects – this list is not exhaustive but does provide an idea of the range of activities undertaken.

- **Biodiversity management** by
    - Protecting **water resources** in river systems;
    - Incorporating biodiversity issues into **fire management** systems;
    - Co-ordinating a strategy for **invasive alien species**;
    - An **estuary management** programme;
    - **Urban biodiversity conservation;**
    - Managing **wetlands**;
    - Co-ordination of key players in **climate change**;
    - **Marine Protected Area** projects.
- Facilitating **biodiversity planning** in:
    - A renosterveld conservation and management project;
    - Fine-scale biodiversity planning in priority lowland areas;
    - Integrating biodiversity priorities in land-use planning and decision-making;
    - Making spatial biodiversity information available.
- **Biodiversity stewardship** (see Box 23).
- **Monitoring and evaluation (M&E):**
    - An M&E framework to measure the progress of the partnership programme towards its high level objectives, as well as its overall purpose, is currently being drafted. The framework will incorporate both quantitative indicators and qualitative aspects through case studies;
    - An M&E handbook for project implementers has been developed as part of the toolbox following the development of a project handbook.
- Building a **biodiversity economy** by promoting:
    - Economic activity that uses biodiversity in a sustainable way such as harvesting of wild flowers;
    - Creating jobs and opportunities for small business development in previously disadvantaged and marginalised communities such as horticulture and biodiversity-friendly tourism;
    - Sustainable agriculture, fisheries and animal husbandry through stewardship;
    - Land uses that are compatible with biodiversity;
    - An understanding of the value of the region's biodiversity to sustaining livelihoods and jobs.
- **Conservation education** through:
    - Capacity building;
    - Resource materials development;

- Schools support;
- Conservation education networking.

- **Institutional strengthening** through:
  - Capacity building of conservation managers;
  - Creating a learning network;
  - Creating a spatial biodiversity information system;
  - An institutional sustainability programme of work.

Box 23: Biodiversity Stewardship

The ultimate goal of biodiversity stewardship is to safeguard threatened habitats and create secure biodiversity corridors within production landscapes by keeping people on the land and involving them in the conservation of these threatened habitats.

Biodiversity stewardship provides a powerful tool to assist government fulfilling its mandate to conserve biodiversity outside of state-owned protected areas. Acquiring land to expand the protected area network is generally expensive and biodiversity stewardship provides a cost-effective alternative by landowners committing though formal agreements or contracts to conserve and manage biodiversity on their own land, including private farms, communal land and land owned by municipalities. Biodiversity stewardship can be used to conserve areas with high biodiversity value and link them with a network of other protected areas and conservation areas in the landscape, while ensuing that landowners who commit to this alternative enjoy tangible benefits from their conservation actions.

Biodiversity stewardship programmes are being implemented in several provinces, including KwaZulu-Natal, Mpumalanga and the Eastern Cape, but it is in the Western Cape Province that the programme is most advanced – it is a component of C.A.P.E. and is co-ordinated through the provincial conservation agency, CapeNature. In this province, landowners are given three options for stewardship:

1. Contract Nature Reserves are legally recognised contracts or servitudes on private land to protect biodiversity in the long term.
2. Biodiversity Agreements are negotiated legal agreements between the conservation agency and a landowner for conserving biodiversity in the medium term.
3. Conservation Areas are flexible options with no defined period of commitment and include conservancies.

Successes thus far in the Western Cape include:

- CapeNature has secured 40 Contract Nature Reserves, 12 Biodiversity Agreements and 19 Conservation Areas through the Stewardship Programme.
- The Greater Cederberg Biodiversity Corridor and the Gouritz Corridor have also secured conservation land in the above categories using the biodiversity stewardship methodology.
- Competent extension staff members have been developed within CapeNature who are able to negotiate legal contracts and provide landowners with ongoing management support.
- Areas of priority biodiversity which provide ecosystem services have been secured, some with potential for tourism-related economic activities.

The C.A.P.E. partnership programme unites government and civil society to achieve the objectives of conserving biodiversity and create benefits for all the people of the Cape Floral Kingdom. There are 23 signatories to the C.A.P.E. Memorandum of Understanding, including NGOs, national and provincial government departments and conservation agencies. These conservation agencies, CapeNature and Eastern Cape Parks, play a key role in housing and managing many of the C.A.P.E. programmes, such as the stewardship programme, and will take over elements of the C.A.P.E. programme on a permanent basis over time.

As a pioneer in large-scale, multiple-stakeholder conservation planning and implementation in South Africa, the C.A.P.E. programme has not been without its challenges, but it has overcome these to be a model for other biome initiatives in the country. Its success can be ascribed to the strong awareness and collaboration amongst the diverse stakeholders. This has been achieved through focus on:

- **Mainstreaming** by incorporating biodiversity conservation objectives into all production sectors and government programmes;
- A **participatory approach** that encouraged stakeholder ownership of the initiative;
- Private sector involvement in certain key sectors through **public private partnerships**;
- Technical and financial assistance from **international partnerships**;
- A strong and independent **programme co-ordination unit** that facilitated a co-ordinated approach to the programme.

Succulent Karoo Ecosystem Programme (SKEP)

The succulent karoo biome is the only entirely arid global biodiversity hotpot. It covers 116 000 km^2 and stretches from southern Namibia through Namaqualand into the Little Karoo. Over 6 000 plant species, 250 bird species, 78 mammal species and 132 reptile species occur in the area, of which some 40% are endemic. The biome is under severe threat from human activities such as prospecting and exploitation of the mineral resources, over-grazing on commercial and communal land including ostrich farming, and the illegal collection and trade of succulents (SKEP 2003).

After a consultative and inclusive planning phase, SKEP commenced in 2003 as a 20-year strategy with implementation funding for five years of $8 million from the Critical Ecosystem Partnership Fund (CEPF). The programme is jointly implemented by South Africa and Namibia. A core principle of the programme is to develop conservation *as* a land-use rather than "instead of land-use". During the planning phase it was established that only 3.5% of the biome is formally protected and that 27% was in a relatively pristine state (SKEP 2003).

An innovative approach during the planning stage was to enlist local experts working in existing organisations involved in conservation or land-use issues at a sub-regional level. The local representatives, known as Champions, were responsible for soliciting information from and communicating the message of SKEP to local stakeholder groups. This approach solicited local support for the programme and its vision. The socio-political, economic and institutional issues raised at the local level were integrated with scientific expertise to inform the conservation planning reflected in the 20-year strategy for the programme. The planning process sought to identify areas with the highest concentration of biodiversity, the areas of greatest vulnerability and opportunities for sustainable land-use and development. Conservation targets were set and nine priority geographic areas were identified as the most efficient locations for achieving these targets.

The strategy identified the following four strategic focal areas as priorities (SKEP 2003):

- Increasing local, national and international **awareness** of the unique biodiversity of the Succulent Karoo;
- **Expanding protected areas** and improving conservation management, particularly through the expansion of public-private-communal-corporate partnerships;
- Supporting the creation of a **matrix of harmonious land uses**;
- Improving the **institutional co-ordination** to generate momentum and focus on priorities, maximise opportunities for partnerships and improve sustainability.

The strategy includes an implementation plan. A feature of the implementation arrangements is the continuation of the Champions concept that was successfully used during the planning phase. This ground level approach uses sub-regional co-ordinators, and an assistant, based in the field for each of the five sub-regions. They act as a dedicated SKEP unit to build awareness and capacity amongst stakeholders and formalise Advisory Committees in each sub-region which includes representatives from a wide sectoral base. SKEP priorities are implemented at the local level with an integrated effort from local agencies, communities, corporations and private and communal farmers (DEAT 2005b).

The CEPF grant ended in February 2008. At that time a review of the first five years of the 20-year strategy was undertaken. Key results from this review were (CEPF 2008, SANBI 2008):

- 2.9 million hectares of land has been added to the conservation estate through establishment of conservancies, stewardship agreements and the incorporation and designation of state land, although this includes land in both South Africa and Namibia including the soon to be proclaimed 2.6 million ha Sperrgebiet National Park in Namibia. Across both countries, this reflects an increase in conserved land to 5.8%, almost double the amount under conservation in 2003;
- Land management has improved on 3 million ha of land based on activities such as invasive alien clearing and biodiversity-friendly management practices;
- Seven ecological corridors have been reinforced as a result of anchor projects that have improved co-ordination, collaboration and synergy between projects;
- $4.5 million has been leveraged for conservation in the succulent karoo by projects receiving CEPF grants – once again this includes amounts in both South Africa and Namibia;
- Best practice guidelines from the wine, rooibos, 4x4 and potato industries have been developed and are in process for the ostrich industry. Best practice for rehabilitation of mine dumps has been developed and is under implementation;
- CEPF projects have contributed to the alleviation of poverty via job creation and improvements in livelihoods with:
    - at least 395 short to medium term jobs created, of which 336 were in South Africa. Many of these jobs are biodiversity-based in the tourism sector;
    - the SKEPPIES Fund, a small grants facility combining conservation initiatives with local development imperatives created 19 businesses and 109 local jobs (note that these jobs are already included in the jobs created under the previous bullet); added value to 14 local businesses and developed the capacity of 350 people to engage in development and conservation activities while helping to conserve nearly 1 000 ha of biologically rich land;
- SKEP conservation targets and priorities have been integrated into South African and Namibian institutional frameworks for biodiversity conservation while relevant national and provincial government agencies have made formal commitments through the singing of Memoranda of Understanding (MoU).

Planning for the next phase of SKEP is at an advanced stage with a strategic plan for 2009 to 2014 currently being developed. This second phase will focus on consolidating the programme and the achievements from the first phase.

As with the C.A.P.E. programme, SKEP has adopted innovative approaches to obtain wide-spread support for conservation in a high priority biodiversity area and has achieved significant environmental and socio-economic successes in its first five-year phase (CPEF 2008).

Eastern Cape Co-ordination Unit for Bioregional Programmes

The Eastern Cape is one of South Africa's nine provinces. It has a largely rural population and is one of the poorest provinces in the country, but is of great biodiversity significance with eight of South Africa's nine biomes occurring in the province. In addition a portion of each of the three globally recognised biodiversity hotspots in South Africa (the Cape Floristic Region; the Succulent Karoo and the Maputaland-Pondoland-Albany hotspot) falls within the Eastern Cape.

SANBI and the Eastern Cape Provincial Government have entered into a partnership to establish the Eastern Cape Implementation Committee for Bioregional Programmes. This multi-stakeholder partnership allows the participating agencies to co-ordinate their biodiversity related activities and align environmental, social and economic goals with the bioregional and ecosystem programmes (SANBI 2008). There are six initiatives that fall wholly or partly within the Eastern Cape: C.A.P.E., SKEP, the Grasslands Programme, the Subtropical Thicket Ecosystem Programme (STEP), the Wild Coast Programme and the Maloti-Drakensberg Transfrontier Conservation Area Project. Commitment of stakeholders has been obtained by signature of an MoU by key government departments at provincial and national level, conservation agencies, municipalities, environmental NGOs and the Development Bank of South Africa.

STEP is one of the initiatives that falls wholly within the Eastern Cape. The main aim of the programme was to conduct a thorough biodiversity planning exercise in South Africa's thicket biome. Objectives included (DEAT 2005b):

- A conservation planning framework and implementation strategy for the conservation of subtropical thicket;
- Prioritisation of conservation actions;
- Spatial biodiversity information for incorporation into regional, provincial and national land-use planning frameworks;
- Capacity building in the development and application of spatial biodiversity planning products;
- Creating awareness of the value and status of the thicket biome.

Implementation of the programme is in progress with focus on the Fish River and Sundays River valleys.

As mentioned in Section 2.8.5, the Mainstreaming Biodiversity into Planning and Development project is a capacity building project aimed at Eastern Cape's land-use planners and decision-makers with the objective of increasing capacity around the natural environment and specifically the incorporation of biodiversity information into land-use planning processes.

Grasslands Programme

Grasslands have long been recognised as important for both biodiversity and economic development. Grasslands cover 29% of South Africa's land area and are an important habitat for birds, including the threatened blue cranes and swallows, mammals, reptiles and butterflies. They also harbour important wetlands with five of South Africa's 19 RAMSAR sites occurring in grasslands (SANBI 2008). There are 72 vegetation types in grasslands of which one is listed as critically endangered, 14 endangered and 24 vulnerable while 83% of river systems in grasslands are threatened, with 48% critically endangered. It is estimated that in South Africa, 30% of grasslands are irreversibly transformed and only 1.9% of the biome is formally conserved.

Grasslands provide essential ecosystem services that are necessary for economic development, but are in turn threatened by certain of these developments. The major land uses of the grasslands

biome include urban development (South Africa's largest urban and industrial area of Gauteng is located in grasslands); coal mining; plantation forestry; as well as agriculture, including cultivation (mainly cereals) and livestock production. The correct location of these activities, as well as appropriate management practices, offers opportunities to align development and conservation objectives. Similarly, the reverse also applies, implying that the intention is not to prevent development but to ensure that it is appropriately located and managed. Accordingly, the Grasslands Programme is looking to promote development planning and practices that ensure the sustainability of the grasslands biome.

A Grasslands Forum that brought together government role players from various provinces was established in 2002. A series of initiatives through this forum resulted in the Grasslands Programme, a twenty-year initiative with its strategic goal being to "secure the biodiversity and associated ecosystems services of the grasslands biome for the benefit of current and future generations".

As with C.A.P.E. and SKEP, the development of the Grasslands Strategy during the planning phase involved the participation of a range of stakeholders, and this multi-stakeholder approach continues in the implementation phase. The programme is hosted by SANBI and is a strategic partnership between national, provincial and local government, the private sector, academic institutions and civil society. The GEF has approved $8.3 million funding for the first five years which will focus on implementation of a mainstreaming strategy. The programme has the support of 14 institutions providing co-financing of $36.7 million (SANBI 2008). The institutional arrangements for implementation are that the various components will be implemented by agencies and roleplayers in the sectors of focus, specifically:

- The forestry component is being implemented through the industry association, Forestry SA;
- The urban component is being implemented through the department responsible for land-use planning, the Gauteng Provincial Department of Agriculture, Conservation and Environment;
- The coal mining component is being undertaken by SANBI through the Working for Wetlands programme which has experience in engaging with coal mining roleplayers;
- The agriculture component is being implemented by various agencies due to it diversity and complexity. These are:
    - WWF-SA and the Botanical Society of South Africa for the Wakkerstroom/Luneburg Demonstration District Project in Mpumalanga,
    - Mpumalanga Tourism and Parks Agency for the biodiversity stewardship programme in Mpumalanga,
    - Ezemvelo KZN Wildlife for the biodiversity stewardship programme in KwaZulu-Natal,
    - Additional partnerships for implementation will be formalised in the Eastern Cape and the Free State where site level activities are planned.

The Programme's initial focus will be to mainstream biodiversity objectives into the major production sectors, namely: agriculture, forestry, urban development and coal mining, by seeking to lift a number of barriers to conservation within the production sector institutions. Identified barriers are market failure, systemic and institutional capacity weaknesses and limited know-how for biodiversity management. This will be achieved through interventions at three levels: macro-level policy interventions, market-level interventions, and site-level interventions in demonstration districts. The project's main outcomes and interventions are summarised below.

Outcome 1: The enabling environment for biodiversity conservation in production landscapes is strengthened

- The enabling policy and regulatory framework is deepened,
- A knowledge management system for the Grasslands Programme is developed,

- Capacity of stakeholder institutions to engage effectively in mainstreaming biodiversity management into production practices is increased.

Outcome 2: Grassland biodiversity conservation objectives mainstreamed into agriculture
- Rangeland management systems that incorporate biodiversity management objectives are piloted,
- Biodiversity-friendly livestock/game production systems are promoted through certification schemes,
- Land-use allocation and decision-making processes reflect biodiversity conservation priorities

Outcome 3: The forestry sector directly contributes to biodiversity conservation objectives in the grasslands biome
- Management of existing unplanted forestry owned land is improved,
- Biodiversity stewardship arrangements are operationalised,
- Certification systems are strengthened,
- Appropriate expansion of new forestry plantations in terms of location.

Outcome 4: Grassland biodiversity management objectives mainstreamed into urban economy in Gauteng
- Biodiversity toolkit (policy, guidelines, decision-support tools) is developed for use by province and municipalities within urban areas,
- Mainstreaming capacity of urban stakeholders is strengthened through targeted awareness, communication and training,
- Priority areas are secured as biodiversity refugia.

Outcome 5: Biodiversity management secured in coal mining sector
- A biodiversity offset scheme is developed,
- Coal mine expansion is planned using biodiversity information.

The Grasslands Programme commenced implementation in 2008, and is still in its early stages of implementation. Thus far, the programme has engaged the forestry sector and aims to secure 37 priority biodiversity sites on forestry owned land in the next five years, with the declaration of the first pilot site of 759 ha in KwaZulu-Natal as a protected area at an advanced stage. Biodiversity stewardship with private land owners in KwaZulu-Natal, Mpumalanga and Gauteng is also progressing. Guidelines on how to declare priority biodiversity sites as protected areas in the urban environment have been developed and a strategy for biodiversity offsets in Gauteng is being developed.

A key challenge that the programme is encountering is creating sufficient capacity and institutional "buy-in" for mainstreaming. Individual champions and drivers, with the skills required to drive a biodiversity agenda within the strategic plans, policies and goals of other sectors, are key to delivering on a mainstreaming agenda. Similarly, securing real institutional commitment and support within institutions in other sectors is not easy, and is frequently tested when commitment in principle needs to translate into commitment in action and delivery. It is important if the Grasslands Programme is to be sustainable and successful in the long term that these agencies integrate the projects as part of their core activities and allocate staff and budget to them once the GEF funding is completed.

Marine Programme

SANBI, together with the Marine and Coastal Management (MCM) branch of DEAT, co-ordinates a Marine Programme in partnership with WWF-SA, with a strong focus on offshore Marine Protected Areas (MPAs). The shortfall in South Africa's Marine Protected Area (MPA) network, especially for offshore MPAs (with a 0.16% level of protection), was highlighted in section 2.5.2, while the status and threats to marine biodiversity were discussed in sections 1.3.4 and 1.4.5. The current MPA network is not representative as it is biased towards inshore areas and the east coast, with several marine bioregions and habitat types without any formal of protection while others fall short of the targets (Sink & Attwood 2008). In response to the inadequate level of formal protection of the offshore ecosystems, the Offshore Biodiversity Initiative (OBI) has been initiated as a flagship project of the Marine Programme. One of the outputs from this project is the publication of *Guidelines for Offshore Protected Marine Areas in South Africa* (Sink & Attwood 2008). A brief overview of the project and guidelines is presented below.

The OBI aims to facilitate the development of a representative offshore MPA network based on the best available scientific information, for the conservation of the country's offshore biodiversity and the wise use of its offshore marine resources. It further aims to ensure that there is broad support from the various offshore marine use sectors. The project is being developed jointly by SANBI and the MCM branch of DEAT, with financial support from the WWF Green Trust and in consultation with the Department of Minerals & Energy, the Petroleum Agency of South Africa and stakeholders from commercial fishing, mining, petroleum and other maritime industries (Sink & Attwood 2008).

The development of Offshore MPAs contributes to a representative MPA network for South Africa and seeks to reverse the progressive degradation of offshore environments and resources, contribute to sustainable use and allow the recovery of impacted habitats and fish stocks while meeting international biodiversity commitments. A holistic and inclusive approach has been followed, with various stakeholders from government, NGOs and industries such as petroleum, commercial fishing, marine diamonds, marine transport, waste disposal and the navy involved, with the recognition that MPA planning should be integrated with the management of fisheries and other maritime industries. Efforts will be focussed on vulnerable offshore habitats such as cold water coral reefs, sponge beds and other fragile deep water communities that are slow to recover if the seabed is damaged.

The Sink & Attwood (2008) Offshore MPA guidelines outline the rationale, objectives, and proposed approach for the establishment of a representative system of Offshore MPAs for the South African Exclusive Economic Zone (EEZ) and territorial waters. The guidelines intend to communicate the proposed aims and methods to interested parties to stimulate debate and encourage participation in a consultative process of establishing the MPAs. The guidelines were refined following a stakeholder workshop in 2007.

The objectives of the OBI include the establishment of an ecologically representative network of effectively managed MPAs that include all marine habitat types in all marine bioregions in South Africa to (Sink & Attwood 2008):

- Contribute to the long-term persistence of offshore biodiversity and its underlying processes;
- Contribute to sustainability of fisheries and ecosystem-based management of resources;
- Provide undisturbed areas for scientific study and long-term monitoring;
- Advance integrated spatial development planning and management arrangements for the Exclusive Economic Zone;
- Promote appropriate non-consumptive use of the offshore marine environment.

The proposed approach recognises and addresses the problems associated with previous attempts to secure protection for offshore habitats. Key elements of the proposed approach are (Sink & Attwood 2008):

- Systematic biodiversity planning based on best available existing scientific and socio-economic research;
- Integrated spatial planning framework with shared spatial data between sectors and collaboration between and within government departments. The following components are needed to support spatial biodiversity planning:
    - Detailed national marine habitat classification and habitat maps;
    - Mapping of ecological processes;
    - Mapping of pressures and threats to biodiversity;
- Application of other experiences of MPAs and spatial planning;
- Stakeholder involvement in the planning and implementation process;
- Consideration of appropriate trade-offs among the interests of biodiversity and other interest groups. This will seek to mainstream biodiversity in the marine sector by:
    - Collating and distributing biodiversity best practice information for mainstreaming;
    - Piloting implementation of new approaches to marine biodiversity research and conservation;
- Raising awareness of MPA benefits, design and supporting science;
    - Identifying and addressing implementation and management concerns including compliance and monitoring of offshore MPAs;
    - Ongoing alignment with policy and legislation.

SANBI's Marine Programme co-ordination unit will continue to play a lead role in co-ordinating efforts in the marine biodiversity sector, *inter alia,* through the collation of data for the NSBA 2010 and effecting the implementation of the Offshore MPAs.

Other biodiversity-related initiatives in the marine environment are shown in Box 24.

Box 24: Marine biodiversity initiatives

The **Responsible Fisheries Programme** was launched in 2002 by WWF-SA and BirdLife South Africa. This programme focuses on assessing and reducing the by-catch of threatened seabirds, sharks, turtles and cetaceans in the Benguela Large Marine Ecosystem.

The **WWF Sanlam Marine Programme**, co-ordinated through SANBI, is an initiative with three aims: to establish and implement a network of effectively managed and ecologically representative MPAs by 2020; to restore at least half of the overexploited fish stocks to sustainably managed levels by 2020 and maintain the status of all sustainably exploited fish stocks; and to apply an ecosystem approach to fisheries in South Africa and reduce associated negative environmental impacts of fishing practices to acceptable levels by 2012. The programme also has cross-cutting activities that target community development and conservation education.

Freshwater Programme

Recognising the value and threatened status of South Africa's freshwater biodiversity (see sections 1.3.2 and 1.4.3), and the need to build competence and leadership in this area, SANBI is in the process of establishing a programme focusing on freshwater biodiversity, in line with the establishment of other bioregional and ecosystem programmes. The Freshwater Programme will provide a home for the National Freshwater Biodiversity Collaboration (Box 13), the National Freshwater Ecosystem Priority Areas (NFEPA) project (section 2.5.3), Working for Wetlands, the

National Wetland Inventory and other relevant initiatives, in a way that promotes integration, co-ordination and synergy between them. It will thus allows a programmatic approach to be adopted, expressed through the co-ordinated and coherent operation of more discrete initiatives and projects. The programme is in its infancy and will focus on a strategy development process in 2009 in order to identify opportunities and key areas for intervention. Key to the programme's operation will be developing strategic relationships with other organisations with shared objectives, especially DWAF.

3.4. Mainstreaming biodiversity in land-use planning and decision-making

Mainstreaming biodiversity implies integrating biodiversity concerns into planning and decision-making at the appropriate levels. As explained in section 3.2.1, South Africa has three spheres of government – national, provincial and local – with the powers and functions of each sphere set out in the Constitution. Certain functions are exclusive national, provincial or local government competences, while other functions are concurrent competences. For mainstreaming to be effective, biodiversity needs to be an integral part of the planning and decision-making processes in all three spheres of government. This section briefly assesses the degree to which biodiversity considerations are included in land-use planning and decision-making.

There are several tools available to promote the sustainable use and management of biodiversity in the country. Although certain of the specific tools are still under development, environmental considerations, including biodiversity, need to be taken into account in the following processes:

- **Land-use/spatial planning,** including at the local government level through Spatial Development Frameworks (SDFs), which are the spatial component of municipal Integrated Development Plans (IDPs) (see below);
- **Land-use management,** including applications for changing the land use of an area;
- **Specific project-related applications,** including environmental authorisation, water use licenses, heritage permissions and agricultural permits such as for cultivation of virgin soil.

Land-use planning takes place primarily at the local government level, although it is informed by the National Spatial Development Perspective and Provincial Spatial Development Frameworks. The biodiversity sector is putting significant effort into developing tools that will allow biodiversity to be integrated in municipal planning processes as this will promote land-use decisions that are compatible with the biodiversity importance of the area in question.

South Africa introduced a system of Integrated Development Planning in terms of the Municipal Systems Act, 32 of 2000. This planning process requires municipalities to prepare five-year strategic Integrated Development Plans (IDPs) that are reviewed annually in consultation with communities and stakeholders. These IDPs seek to promote integration by balancing the social, economic and ecological pillars of sustainability. The IDPs not only inform municipal management, but they also guide the activities of any agency from the other spheres of government, corporate service providers, NGOs and the private sector within the municipal area.

Spatial Development Frameworks (SDFs) are required as an integral component of all IDPs and provide strategic guidance on the nature and location of development within the municipality. The SDF is a critical instrument for biodiversity conservation – if areas of biodiversity importance can be reflected in the SDF, this will help to guide development by ensuring that the type of development in an area is appropriate to its biodiversity.

The importance of developing appropriate biodiversity tools for inclusion in planning processes is encapsulated in the NBF's Priority Action 3 – the need to integrate biodiversity considerations in land-use planning and decision-making by developing tools for supporting and streamlining environmental decision-making. The NBF further highlights the specific practical tools that can be developed for officials, consultants and decision-makers (Box 25), such as listing of threatened ecosystems in terms of the Biodiversity Act, provincial spatial biodiversity plans and bioregional plans. Certain of these planning tools are themselves priority actions in the NBF. The tools are mostly still in the process of being developed, but once this has been done, they could be powerful in integrating and standardising biodiversity considerations in environmental decision-making across all spheres of government.

Progress is being made with integrating biodiversity into land-use planning and decision-making. In the Eastern Cape, SANBI's *Mainstreaming Biodiversity into Planning and Development* project is a capacity building project for the province's land-use planners and decision-makers with the aim to increase the capacity to incorporate biodiversity information into the planning process (SANBI 2008). In the Western Cape, one of the components of the C.A.P.E. programme is the *Integrating Biodiversity into Land Use Decision-making* project. The project is implemented by SANBI in partnership with the Western Cape Department of Environmental Affairs and Development Planning and aims to improve the integration of biodiversity into land-use planning and decision-making through a combination of activities, including supporting the strengthening of co-operative governance where appropriate and required; providing accurate, relevant and useful information to land-use decision-makers; providing appropriate training and targeted awareness-raising; and facilitating one-on-one follow up and support to decision-makers. The outputs of the project include:

- Training and capacity building of provincial and municipal staff,
- The development of an integrated spatial biodiversity layer for the Western Cape,
- The integration of biodiversity into several municipal SDFs,
- A study monitoring compliance with biodiversity-related Conditions of Authorisation for successful development applications.

Current challenges regarding integrating biodiversity into land-use planning and decision-making processes include the following:

- The strategic context for decisions at a site-specific level is still being developed, with provincial spatial biodiversity plans being important tools in this regard;
- Biodiversity information is generally not yet well integrated into municipal SDFs;
- Threatened vegetation types, ecosystems and habitats are generally not incorporated in planning and decision-making, but the forthcoming listing of threatened ecosystems in terms of the Biodiversity Act will assist in closing this gap;
- Guidelines for specialist biodiversity studies as part of the EIA process (for example, on qualifications of the specialist and contents of the specialist report), have been developed for the Western Cape (Brownlie 2005) but not for all the provinces;
- In most cases decisions are made in isolation by the various relevant authorities, while integrated decision-making that considers all relevant aspects such as, for example, biodiversity, water and agriculture matters, would be preferable;
- The link between healthy functioning ecosystems, economic development and social well-being is generally not well understood by planners and decision-makers;
- Apart from the lack of awareness about biodiversity, poorly capacitated institutions with inadequate corporate governance and individuals lacking relevant experience and skills hamper effective decision-making.

It is anticipated that the tools under development will go some way to addressing the current shortcomings. Future national reports will contain information on these tools and their effectiveness in application.

Box 25: Tools to assist land-use planning and decision-making

The following tools are being developed to support and streamline environmental decision-making and to enable the integration of biodiversity considerations in multi-sectoral planning processes:

- Identification and **listing of threatened ecosystems** (NBF Priority Action 18). The listing of threatened or protected ecosystems is provided for in the Biodiversity Act. A draft list of threatened terrestrial ecosystems has been developed based on clear criteria and best available science, and work is underway to develop lists of threatened aquatic ecosystems. Supporting material, such as how listed ecosystems should be taken into account in planning and decision-making, will also be available. Together with the other planning tools mentioned hereunder, listed threatened ecosystems will support and streamline sound environmental decision-making.

- Development of **provincial spatial biodiversity plans** (NBF Priority Action 16). These plans, at a provincial scale, are based on a systematic biodiversity assessment incorporating terrestrial and aquatic features and identifying geographic biodiversity priority areas with accompanying guidelines for land-use planning and decision-making. They will be integrated into other planning tools such as provincial growth and development strategies, PSDFs, EIA supplementation projects and provincial state of environment reports. They also serve as a basis for provincial protected area expansion planning. Four provinces already have spatial development plans and they are in the development process in most other provinces.

- Publication of **bioregional plans** for districts or groups of local municipalities which identify **critical biodiversity areas** in which loss of natural habitat should be avoided (NBF Priority Action 17). The Biodiversity Act provides for the publication of bioregional plans that will underpin integrated management of terrestrial and aquatic systems in priority areas and will provide a tool for supporting and streamlining environmental decision-making. A Guideline for Bioregional Plans has been approved and will be gazetted shortly. Several provinces are developing bioregional plans in line with these guidelines, based on their provincial spatial biodiversity plans. Figure 3-1 shows the relationship between provincial spatial biodiversity plans, bioregional plans and other planning and assessment tools and frameworks.

- **Ecosystem guidelines for environmental assessment** and generic **terms of reference for biodiversity specialist studies** as part of EIAs. These are aimed at dealing with the shortcoming that biodiversity specialist studies in EIAs are often limited to species of concern and do not address ecosystem functioning or cumulative impact. These tools have been published for the Western Cape Province (De Villiers *et al.* 2005, Botanical Society of SA Conservation Unit 2007) and will be developed for other provinces.

- **Framework for guiding decisions on trade-offs** for decision-makers. In land-use decisions, conflicts between, for example, biodiversity management and job creation, cannot always be avoided, and trade-offs need to be made in some cases. A framework will be developed to guide decision-makers about how to weigh up biodiversity against socio-economic considerations, taking into account threatened ecosystems and critical biodiversity areas

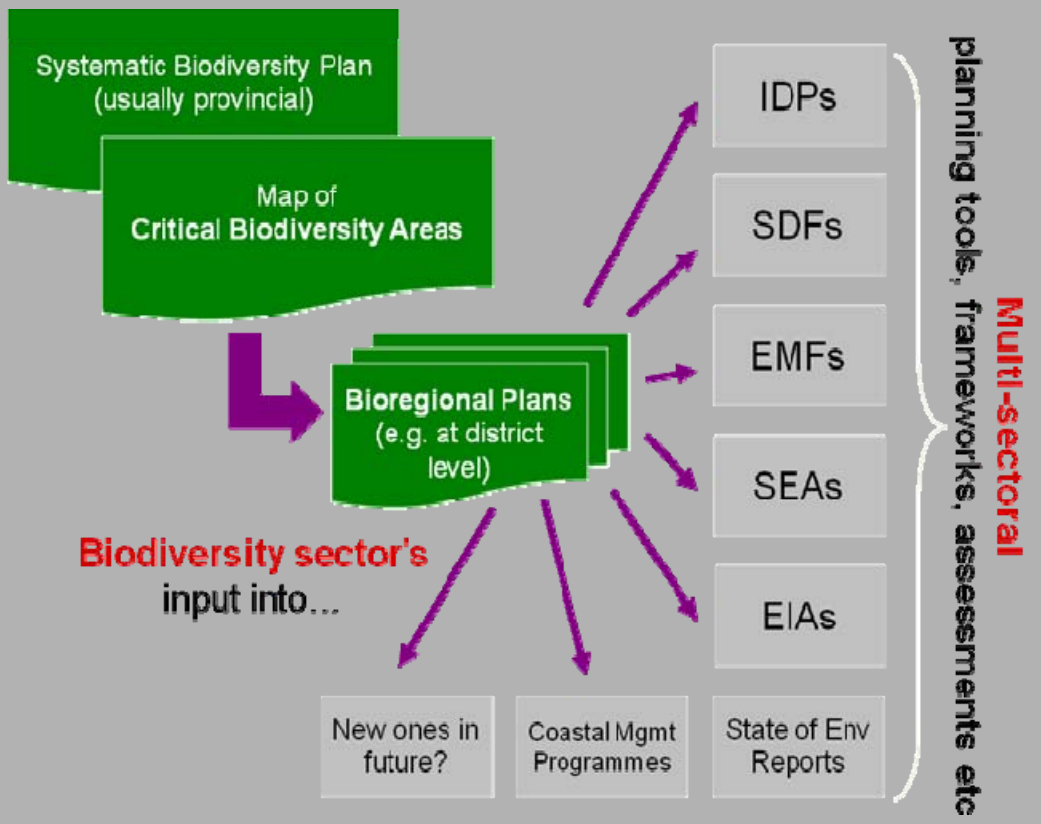


Figure 3-1: The relationship of bioregional plans to other plans and frameworks

- **Policy framework for biodiversity offsets.** A biodiversity offset involves setting land aside in the same or similar ecosystem, at the cost of the developer, where there is unavoidable residual damage to biodiversity as a result of a development. A policy framework will be developed to ensure a consistent approach to the implementation of biodiversity offsets.

Agriculture, particularly the cultivation of virgin soil, has been the single biggest cause of irreversible habitat loss in the Cape Floristic Region. However, a complex legislative environment and administrative fragmentation inhibit the coherent, consistent and effective incorporation of biodiversity considerations in agricultural decision-making, with three statutory bodies at the national and provincial spheres of government involved in decision-making about cultivation. Permits are issued for the cultivation of virgin land under regulations issued in terms of the Conservation of Agricultural Resources Act, 43 of 1983, (CARA), and the EIA regulations of NEMA, which came into effect in 2006, require environmental authorisation following a Basic Assessment for the transformation or removal of indigenous vegetation of 3 ha or more, while a full EIA is required where the developed area is 20 ha or more. The listing of threatened ecosystems under the Biodiversity Act (see Box 25) for which regulations and notices have not yet been issued or gazetted, will provide an additional instrument to protect sensitive areas such as the Cape Floristic Region, from further cultivation.

In the Western Cape, several government departments (the provincial Department of Environmental Affairs and Development Planning, national Department of Agriculture (DoA), DWAF and CapeNature) entered into a Memorandum of Agreement (Agreement of co-operation concerning the streamlining of the application and review processes for the cultivation of agricultural fields).

This agreement recognises the constitutional imperative to co-ordinate and streamline the requirements of the various authorities and aims to ensure that the regulatory objectives of all authorities are satisfactorily served, decision-making is well informed and integrated, administrative action is lawful, reasonable and procedurally fair, and actual and potential conflicts are resolved. The agreement deals with co-ordination of the respective mandates for applications for ploughing permits under CARA and the environmental authorisation under the EIA regulations, and DoA has to withhold issuing a cultivation permit until the provincial environment affairs department has commented on the application. However, the agreement does not indicate if DoA is obliged to consider these comments or any recommendations made, and in practice DoA has issued permits in conflict with recommendations. Neither the Memorandum of Agreement nor the NEMA regulations provide an unambiguous and explicit legal mechanism to ensure that environmental implications of cultivation are binding on permits issued under CARA where less than 3 ha of threatened vegetation is to be cultivated, although the listing of threatened ecosystems should close this gap (De Villiers 2007).

De Villiers (2007) identified a number of legal and administrative factors that have militated against the effective consideration of biodiversity in land-use decision-making in the Western Cape. The report focussed mainly on the situation prior to the introduction of the new EIA regulations under NEMA in 2006, but many of the issues highlighted are still valid and there is still concern as the regulations do not require environmental authorisation for the cultivation of less than 3 ha of virgin land.

More recently, De Villiers & Hill (in press) highlighted the difficulty of stemming biodiversity loss due to cultivation in the lowlands of the Cape Floristic Region. This was attributed to:

- A reactive and fragmented focus on cultivation-related impacts at the level of the farm rather than anticipating and assessing changes to affected ecosystems beyond the property boundaries;
- Neglecting and failing to manage cumulative impacts from repeated and similar farm-level developments that individually do not seem significant but in aggregate have negative impacts at a larger scale;
- A lack of sustainability objectives that give strategic guidance to land-use planning and decision-making in areas with high biodiversity value and good agricultural potential;
- The relative isolation of farms and their distance from major centres results in logistical challenges for the EIA process, such as lack of local Environmental Assessment Practitioners, significant time and travel expenses to undertake the EIA processes and reduced value of public participation;
- The risk of regulatory non-compliance and delays because farmers prefer to ‘go it alone’ due to the perceived high costs of appointing an Environmental Assessment Practitioner.

To address the shortcomings identified above, De Villiers & Hill (in press) suggest the use of Strategic Environmental Assessments (SEAs) to, *inter alia,* address cumulative impacts at a broader temporal and spatial scale. The benefits of a more strategic approach include:

- Providing a mechanism for public engagement in sustainability discussions at a strategic level;
- Reducing the time, effort and cost in conducting reviews of individual projects;
- Including socio-economic assessments at scales larger than farm level;
- Compensating for unavoidable, irreplaceable loss of biodiversity through instruments such as biodiversity offsets.

Positive steps have been taken over the past few years to address the mainstreaming of biodiversity into EIAs by the Botanical Society's Biodiversity in Environmental Assessment project (Box 26), and DEAT's review of the EIA process (see section 2.8.5.) presents an opportunity to ensure that biodiversity is better integrated at the project level. Furthermore, the new tools that are in the process of being developed will provide support for integrating biodiversity at the planning level. However, it is clear that there are challenges in achieving this objective. One of the biggest challenges is to ensure that there is strong co-operation and agreement across all the national, provincial and local government departments involved and consistency in taking decisions on developments that impact on biodiversity. A further challenge is the need to build capacity at all levels of government, particularly local government, to implement the various tools that are being developed.

Box 26: Biodiversity in Environmental Assessment project

The Botanical Society of South Africa, an NGO, launched a Biodiversity in Environmental Assessment (BEA) project to better incorporate biodiversity priorities identified through systematic biodiversity planning in EIAs, to support off-reserve biodiversity conservation (De Villiers *et al.* 2008). The approach to this biodiversity-inclusive EIA was geared towards contributing to three pre-requisites for mainstreaming, i.e. enabling legislation and policy; guidelines that detail the steps and levels of assessment for biodiversity-inclusive EIAs, and providing information on biodiversity. The project also recognised that biodiversity capacity had to be built in the EIA sector (De Villiers *et al.* 2008).

The project was launched in 2004 and the broad areas of activity undertaken were (De Villiers *et al.* 2008):

- Commenting on the biodiversity and procedural aspects of EIA processes, and occasionally on applications for cultivation or mining rights;
- Developing the *Fynbos Forum Ecosystem Guidelines for Environmental Assessment in the Western Cape* (De Villiers *et al.* 2005)*;*
- Presenting training to environmental assessment practitioners and the provincial environmental department;
- Integrating key biodiversity questions into the official Basic Assessment checklist;
- Exploring strategic, ecosystem-scale alternatives to agri-environmental decision-making in areas with a high coincidence of intensive farming activity and threatened ecosystems.

The achievements, shortcomings of the EIA process and key lessons that emerged from the project include (De Villiers *et al.* 2008):

Achievements include:
- Development of terms of reference for biodiversity assessments that have been adopted by the provincial environmental department;
- Inclusion of key references to the NSBA and spatial biodiversity plans in the official Basic Assessment Questionnaire;

Main **shortcomings** with the EIA process were identified to include:
- The failure to consider ecological processes and issues and the bigger conservation context, such as laws and biodiversity plans;
- Poor or no consideration of alternatives;
- Passing baseline surveys or sensitivity studies as biodiversity assessments;
- Failure to provide effective recommendations on ecosystem management;
- Undue reliance on environmental management plans to manage significant impacts on biodiversity.

Lessons and challenges identified are:
- Key biodiversity considerations seem to have the greatest prospect of being adequately addressed when they are raised as early as possible in the EIA process;

- There has been limited uptake of systematic biodiversity planning to support the assessment and evaluation of cumulative impacts on biodiversity at the ecosystem scale;
- The definition of "biodiversity" and the requirements for a biodiversity assessment have caused confusion, including the level at which biodiversity should be reported (genetic, species or ecosystem), the dependability of vegetation types as biodiversity surrogates, and the qualification and expertise of a biodiversity specialist;
- There are unresolved questions regarding spatial thresholds for maintaining ecological persistence;
- The implications of climate change for project-level biodiversity present a challenge;
- The role of EIAs as vehicles for off-reserve conservation is inhibited by the absence of explicit, statutorily-endorsed limits to the loss of biodiversity and ecological functioning beyond set thresholds;
- There is no monitoring of biodiversity loss or gains arising from the EIA process.

4. CONCLUSION

4.1. Introduction

This chapter draws together the information presented in the previous chapters to assess how actions taken at the national level have contributed towards achieving progress towards the 2010 target (section 4.2) and objectives of the Strategic Plan of the CBD (section 4.3) before presenting an overall conclusion (section 4.4).

4.2. Progress towards 2010 targets

In decision VI/26 the Conference of the Parties adopted the Strategic Plan for the CBD. In its mission statement, the Parties committed themselves to a more effective and coherent implementation of the CBD, to achieve by 2010 a significant reduction of the current rate of biodiversity loss at the global, regional and national level as a contribution to poverty alleviation and to the benefit of all life on earth. This target was subsequently endorsed by the World Summit on Sustainable Development.

In decision VII/30, COP adopted a framework to facilitate the assessment of progress towards the 2010 targets. This is a flexible framework within which national and regional targets may be set and indicators identified. The Framework contains the following seven focal areas:

a) Reducing the rate of loss of components of biodiversity including (i) biomes, habitats and ecosystems, (ii) species and populations, and (iii) genetic diversity;
b) Promoting sustainable use of biodiversity;
c) Addressing the major threats to biodiversity, including those arising from invasive alien species, climate change, pollution and habitat change;
d) Maintaining ecosystem integrity and the provision of goods and services provided by biodiversity in ecosystems, in support of human wellbeing;
e) Protecting traditional knowledge, innovations and practice;
f) Ensuring the fair and equitable sharing of benefits arising from the use of genetic resources;
g) Mobilising financial and technical resources, especially for developing countries, in particular least developed countries, small developing island states and countries with economies in transition, for implementing the CBD and Strategic Plan.

South Africa is in the process of finalising a draft road map to achieve the 2010 biodiversity targets which will include its own sets of targets and indicators to monitor progress towards meeting the 2010 goals. The general challenges experienced in developing targets and indicators have already been discussed in section 1, and these challenges apply equally to the 2010 goals. Accordingly, the approach taken to reporting on progress is to provide appropriate commentary on progress and challenges for each of the goals and targets. This is done is Table 4-1.

Table 4-1: 2010 goals, targets, indicators and progress

Goals and targets	*Relevant CBD Strategic Plan indicators*	*South Africa's progress*
Protect the components of biodiversity		
Goal 1. Promote the conservation of the biological diversity of ecosystems, habitats and biomes		
Target 1.1: At least 10% of each of the world's ecological regions effectively conserved.	• Coverage of protected areas	• South Africa is currently behind target for protected area coverage and representivity of ecosystems and habitats, but the National Protected Area Expansion Strategy has been developed to set targets for expansion, including focus areas to improve ecosystem representivity in the protected area network (refer to section 2.5.2)
	• Trends in extent of selected biomes, ecosystems and habitats	• The Biodiversity Act provides for the listing of Threatened Ecosystems. A draft list of threatened terrestrial ecosystems has been developed, with these described and mapped. Remaining natural habitat within the threatened ecosystems on the draft list makes up 8% of the country, with critically endangered and endangered ecosystems respectively comprising 0.8% and 1.2%.
	• Trends in abundance and distribution of selected species	• Indicators for trends in species to be developed as part of National Biodiversity and Monitoring and Reporting Framework (refer to section 2.4), including the number and status of IUCN Red-Listed species

Goals and targets	*Relevant CBD Strategic Plan indicators*	*South Africa's progress*
Target 1.2: Areas of particular importance to biodiversity protected	• Trends in extent of selected biomes, ecosystems and habitats • Trends in abundance and distribution of selected species • Coverage of protected areas	• Status and progress as reported above • • The State of Environment Report (DEAT 2006) concludes that biodiversity and ecosystem health continue to decline as key drivers of change (land-use change, climate change and alien invasive species) show no sign of decreasing and will remain stable or accelerate in the future. The implication is that South Africa will not achieve the goal of reducing the rate of biodiversity loss by 2010
Goal 2. Promote the conservation of species diversity		
Target 2.1: Restore, maintain, or reduce the decline of populations of species of selected taxonomic groups.	• Trends in abundance and distribution of selected species • Change in status of threatened species	• Indicators for trends in species to be developed as part of National Biodiversity and Monitoring and Reporting Framework (refer to section 2.4) based on number and status of IUCN red-listed species • Refer to section 1.3.4 for discussion on status of marine species • SANBI's Threatened Species Programme plays a co-ordinating role with respect to assessments of conservation status of species: o Updated Red List for plants to be published in 2009; preliminary assessment is that over 10% of plants are threatened o Recent updates indicate 10% of South Africa's birds and frogs and 20% of its mammals are threatened
Target 2.2: Status of threatened species improved.	• Change in status of threatened species • Trends in abundance and distribution of selected species • Coverage of protected areas	• Refer to comments above – indications are that the status of threatened species is declining

Goals and targets	*Relevant CBD Strategic Plan indicators*	*South Africa's progress*
Goal 3. Promote the conservation of genetic diversity		
Target 3.1: Genetic diversity of crops, livestock, and of harvested species of trees, fish and wildlife and other valuable species conserved, and associated indigenous and local knowledge maintained.	• Trends in genetic diversity of domesticated animals, cultivated plants, and fish species of major socio-economic importance • *Biodiversity used in food and medicine (indicator under development)* • Trends in abundance and distribution of selected species	• Indicators for monitoring genetic diversity have not yet been developed
Promote sustainable use		
Goal 4. Promote sustainable use and consumption.		
Target 4.1: Biodiversity-based products derived from sources that are sustainably managed, and production areas managed consistent with the conservation of biodiversity.	• Area of forest, agricultural and aquaculture ecosystems under sustainable management • Proportion of products derived from sustainable sources (indicator under development) • Trends in abundance and distribution of selected species • Marine trophic index • Nitrogen deposition • Water quality in aquatic ecosystems	• Indicators to be developed as part of National Biodiversity and Monitoring and Reporting Framework (refer to section 2.4) • 80% of commercial forest plantations managed according to Forestry Stewardship Council (FSC) standards • The River Health Programme was established in 1994 and uses biological indicators (e.g. fish communities, riparian vegetation and aquatic invertebrate fauna) to assess the health of river systems. A review of rivers under this programme in 2006/07 highlighted that 40% of rivers are in a good state; 32% in a fair state and 28% in a poor state.
Target 4.2. Unsustainable consumption of biological resources, or that impacts upon biodiversity, reduced.	• Ecological footprint and related concepts	• Indicators to be developed for terrestrial and marine species as part of National Biodiversity and Monitoring and Reporting Framework (refer to section 2.4) • Concerns on possible over-harvesting of certain species, such as cycads, abalone and rhino due to illegal harvesting, with medicinal plants also a concern. • The abalone fishery has recently been closed.

Goals and targets	*Relevant CBD Strategic Plan indicators*	*South Africa's progress*
Target 4.3: No species of wild flora or fauna endangered by international trade.	• Change in status of threatened species	• Reporting limited by gaps in knowledge on harvesting levels, impacts on populations and sustainable levels, as well as on the extent and impact of international trade in species and products which is mostly unregulated • It is estimated that some 40 plant species are threatened in part by international trade (especially cycads and succulents), while an estimated 550 species of plant are also traded for medicinal and traditional purposes in South Africa and with neighbouring countries (refer to discussion on GSPC in Appendix III) • Illegal harvesting of abalone (in spite of the fishery being closed) and recent increase in rhino poaching is of concern • Capacity and resources to enforce laws on illegal harvesting is a challenge
Address threats to biodiversity		
Goal 5. Pressures from habitat loss, land use change and degradation, and unsustainable water use, reduced.		
Target 5.1. Rate of loss and degradation of natural habitats decreased.	• Trends in extent of selected biomes, ecosystems and habitats • Trends in abundance and distribution of selected species • Marine trophic index	• Indicators for habitat degradation for all categories (terrestrial, rivers, estuaries, marine and coastal) to be developed as part of National Biodiversity and Monitoring and Reporting Framework (refer to section 2.4)
Goal 6. Control threats from invasive alien species		
Target 6.1. Pathways for major potential alien invasive species controlled.	• Trends in invasive alien species	• Indicators for trends in invasive alien species to be developed as part of National Biodiversity and Monitoring and Reporting Framework (refer to section 2.4) • It is estimated that some 200 IAS infest about 8% of South Africa's surface area

Goals and targets	*Relevant CBD Strategic Plan indicators*	*South Africa's progress*
Target 6. 2. Management plans in place for major alien species that threaten ecosystems, habitats or species.	• Trends in invasive alien species	• As above regarding indicators • Alien Invasive Species regulations in process of being finalised • Several programmes such as Working for Water developed to deal with IAS threat
Goal 7. Address challenges to biodiversity from climate change, and pollution		
Target 7.1. Maintain and enhance resilience of the components of biodiversity to adapt to climate change.	• Connectivity/fragmentation of ecosystems	• Indicators related to climate change, including relevant river and marine indicators, to be developed as part of National Biodiversity and Monitoring and Reporting Framework (refer to section 2.4)
Target 7.2. Reduce pollution and its impacts on biodiversity.	• Nitrogen deposition • Water quality in aquatic ecosystems	• Biodiversity-related Indicators on pollution to be developed as part of National Biodiversity and Monitoring and Reporting Framework (refer to section 2.4) • Refer to discussion above on River Health Programme relating to water quality in aquatic ecosystems
Maintain goods and services from biodiversity to support human well-being		
Goal 8. Maintain capacity of ecosystems to deliver goods and services and support livelihoods		
Target 8.1. Capacity of ecosystems to deliver goods and services maintained.	• *Biodiversity used in food and medicine (indicator under development)* • Water quality in aquatic ecosystems • Marine trophic index • Incidence of human-induced ecosystem failure	• Indicators to be developed as part of National Biodiversity and Monitoring and Reporting Framework (refer to section 2.4) • Refer to discussion above on River Health Programme relating to water quality in aquatic ecosystems

Goals and targets	*Relevant CBD Strategic Plan indicators*	*South Africa's progress*
Target 8.2. Biological resources that support sustainable livelihoods, local food security and health care, especially of poor people maintained.	• Health and well-being of communities who depend directly on local ecosystem goods and services • *Biodiversity used in food and medicine*	• Indicators to be developed as part of National Biodiversity and Monitoring and Reporting Framework (refer to section 2.4) • High level of reliance by local communities on natural resources for food, fuel and medicine – estimates are that some 3 500 species are used by 28 million people in South Africa who consume approximately 19 500 tonnes of medicinal plants each year • A process is under way to establish a policy and management regime for subsistence and small-scale fishers to grant communities access to the resources on which they depend for their livelihood while ensuring that the resources are not depleted
Protect traditional knowledge, innovations and practices		
Goal 9 Maintain socio-cultural diversity of indigenous and local communities		
Target 9.1. Protect traditional knowledge, innovations and practices.	• Status and trends of linguistic diversity and numbers of speakers of indigenous languages • *Additional indicators to be developed*	• Indigenous Knowledge Systems Policy in place to provide fair and equitable compensation of indigenous people for their contribution to protection and conservation of biodiversity • DST is in the process of developing an indigenous knowledge database • People and Parks Programme underway
Target 9.2. Protect the rights of indigenous and local communities over their traditional knowledge, innovations and practices, including their rights to benefit sharing.	*Indicator to be developed*	• The Biodiversity Act and Regulations for Bio-prospecting, Access and Benefit Sharing are in place to regulate access to genetic resources (refer to section 2.8.1)
Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources		
Goal 10. Ensure the fair and equitable sharing of benefits arising out of the use of genetic resources		
Target 10.1. All access to genetic resources is in line with the CBD and its relevant provisions.	*Indicator to be developed*	• The Biodiversity Act and Regulations for Bio-prospecting, Access and Benefit sharing regulate access to genetic resources in line with the CBD (refer to section 2.8.1)

Goals and targets	*Relevant CBD Strategic Plan indicators*	*South Africa's progress*
Target 10.2. Benefits arising from the commercial and other utilisation of genetic resources shared in a fair and equitable way with the countries providing such resources in line with the CBD and its relevant provisions	*Indicator to be developed*	• Progress as above
Ensure provision of adequate resources		
Goal 11: Parties have improved financial, human, scientific, technical and technological capacity to implement the Convention		
Target 11.1. New and additional financial resources are transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with Article 20.	• Official development assistance provided in support of the Convention	• Substantial financial support received from GEF (refer to section 2.6)
Target 11.2. Technology is transferred to developing country Parties, to allow for the effective implementation of their commitments under the Convention, in accordance with its Article 20, paragraph 4.	*Indicator to be developed*	• In some instances South Africa may have methods and techniques (e.g. in relation to systematic biodiversity planning, identifying threatened ecosystems) to transfer to other Parties

4.3. Progress towards goals and objectives of Strategic Plan

Table 4-2 reflects comments regarding South Africa's progress towards meeting the goals and objectives of the Strategic Plan.

Table 4-2: Goals, objectives, indicators and progress towards CDB Strategic Plan

Strategic goals and objectives	*Possible CBD indicators*	*South Africa's progress*
Goal 1: The Convention is fulfilling its leadership role in international biodiversity issues.		
1.1 The Convention is setting the global biodiversity agenda.	CBD provisions, COP decisions and 2010 target reflected in workplans of major international forums	• These goals are to be achieved at the Convention, not the national level – South Africa's contribution to achieving the CBD objectives is summarised in section 2.7.
1.2 The Convention is promoting co-operation between all relevant international instruments and processes to enhance policy coherence.		
1.3 Other international processes are actively supporting implementation of the Convention, in a manner consistent with their respective frameworks.		
1.4 The Cartagena Protocol on Biosafety is widely implemented.		• South Africa is implementing the Cartagena Protocol on Biosafety and submitted the First Regular Report on the Implementation of the Cartagena Protocol on Biosafety (DEAT 2007c) reflecting progress up to the end of August 2007.

Strategic goals and objectives	*Possible CBD indicators*	*South Africa's progress*
1.5 Biodiversity concerns are being integrated into relevant sectoral or cross-sectoral plans, programmes and policies at the regional and global levels.	*Possible indicator to be developed:* *Number of regional/global plans, programmes and policies which specifically address the integration of biodiversity concerns into relevant sectoral or cross-sectoral plans, programmes and policies* *Application of planning tools such as strategic environmental assessment to assess the degree to which biodiversity concerns are being integrated* *Biodiversity integrated into the criteria of multilateral donors and regional development banks*	• Biodiversity is incorporated into South Africa's strategies and plans – refer to section 2.3. • There are SADC protocols on Wildlife, Water and Forests
1.6 Parties are collaborating at the regional and subregional levels to implement the Convention.	*Possible indicator to be developed:* *Number of Parties that are part of (sub-) regional biodiversity-related agreements*	• South Africa is active in regional co-operation with SADC countries through various structures and protocols, as well as being party to agreements with its neighbours on shared water resources and Transfrontier Conservation Areas
Goal 2: Parties have improved financial, human, scientific, technical, and technological capacity to implement the Convention.		
2.1 All Parties have adequate capacity for implementation of priority actions in national biodiversity strategy and action plans.		• Recent National Capacity Self Assessment highlighted capacity constraints – refer to section 4.4.3 for recommendations from this exercise • Funding to implement Priority Actions of the NBF falls short of currently budgeted amounts – refer to section 2.6.5
2.2 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have sufficient resources available to implement the three objectives of the Convention.	Official development assistance provided in support of the Convention (OECD-DAC Statistics Committee)	• Refer to section 2.6 for full discussion on funding for priority actions

Strategic goals and objectives	*Possible CBD indicators*	*South Africa's progress*
2.3 Developing country Parties, in particular the least developed and the small island developing States amongst them, and other Parties with economies in transition, have increased resources and technology transfer available to implement the Cartagena Protocol on Biosafety.		• South Africa has unmet capacity building needs for implementation of the Cartagena Protocol on Biosafety but is unable to participate in capacity building initiatives aimed at developing countries as it already has a regulatory framework in place (refer to response to Article 22 of First Regular Report on the Implementation of the Cartagena Protocol on Biosafety (DEAT 2007c))
2.4 All Parties have adequate capacity to implement the Cartagena Protocol on Biosafety.		• Refer to above comment
2.5 Technical and scientific co-operation is making a significant contribution to building capacity.	*Indicator to be developed consistent with VII/30*	• South Africa actively participates in various international technical and scientific forums
Goal 3: National biodiversity strategies and action plans and the integration of biodiversity concerns into relevant sectors serve as an effective framework for the implementation of the objectives of the Convention.		
3.1 Every Party has effective national strategies, plans and programmes in place to provide a national framework for implementing the three objectives of the Convention and to set clear national priorities.	Number of Parties with national biodiversity strategies	• South Africa has the NBSAP, the NBF, and other plans and programmes for important biodiversity areas – refer to section 2.3.
3.2 Every Party to the Cartagena Protocol on Biosafety has a regulatory framework in place and functioning to implement the Protocol.		• South Africa has a regulatory framework in place for the Cartagena protocol on Biosafety (refer to response to Article 2 of First Regular Report on the Implementation of the Cartagena Protocol on Biosafety (DEAT 2007c))

Strategic goals and objectives	*Possible CBD indicators*	*South Africa's progress*
3.3 Biodiversity concerns are being integrated into relevant national sectoral and cross-sectoral plans, programmes and policies.	*To be developed* *Percentage of Parties with relevant national sectoral and cross-sectoral plans, programmes and policies in which biodiversity concerns are integrated*	• Biodiversity is incorporated into South Africa's strategies and plans – refer to section 2.3 for overall plans that have been developed and section 3.2 for discussion on cross-sectoral co-ordination • Bioregional programmes in priority biomes under threat engage actively with other sectors to mainstream biodiversity in planning, decision-making and production (see section 3.3.2).
3.4 The priorities in national biodiversity strategies and action plans are being actively implemented, as a means to achieve national implementation of the Convention, and as a significant contribution towards the global biodiversity agenda.	*To be developed* *Number of national biodiversity strategies and action plans that are being actively implemented*	• NBF highlights 33 Priority Actions for sector for the next five years – refer to section 2.3.4
Goal 4: There is a better understanding of the importance of biodiversity and of the Convention, and this has led to broader engagement across society in implementation.		
4.1 All Parties are implementing a communication, education, and public awareness strategy and promoting public participation in support of the Convention.	*Possible indicator to be developed:* *Number of Parties implementing a communication, education and public awareness strategy and promoting public participation* *Percentage of public awareness programmes/projects about the importance of biodiversity* *Percentage of Parties with biodiversity on their public school curricula*	• Several government departments, organs of state and NGOs have environmental education and public awareness programmes • However, there is no national strategy in place
4.2 Every Party to the Cartagena Protocol on Biosafety is promoting and facilitating public awareness, education and participation in support of the Protocol.		• Awareness, education and participation takes place to a limited extent for the Cartagena Protocol on Biosafety (refer to response to Article 23 of First Regular Report on the Implementation of the Cartagena Protocol on Biosafety (DEAT 2007c))

Strategic goals and objectives	*Possible CBD indicators*	*South Africa's progress*
4.3 Indigenous and local communities are effectively involved in implementation and in the processes of the Convention, at national, regional and international levels.	*To be developed by the Ad Hoc Open-ended Working Group on Article 8(j)*	• Indigenous and local communities are involved in the implementation of the CBD to a limited extent, for example through programmes such as People and Parks
4.4 Key actors and stakeholders, including the private sector, are engaged in partnership to implement the Convention and are integrating biodiversity concerns into their relevant sectoral and cross-sectoral plans, programmes and policies.	*To be developed* *Indicator targeting private sector engagement,* *e.g. Voluntary type 2 partnerships in support of the implementation of the Convention*	• Stakeholders such as NGOs and the private sector are involved to some extent in implementation of the CBD through implementing various programmes that support achievement of the CBD objectives • Several business and biodiversity initiatives are underway with key production sectors that impact on biodiversity (see section 3.2.7)

4.4. Conclusions

4.4.1. Overall assessment of implementation of the CBD

Significant progress has been made in many areas of biodiversity conservation, management and sustainable utilisation in support of the CBD. In particular, the overhaul of its policy and legislative framework since 1994 has allowed South Africa to draft policies, such as the White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity, and legislation, such as the Biodiversity and Protected Areas Acts, which respond to its commitments under the CBD. Moreover, the development of the NBSAP and the subsequent NBF that will guide the biodiversity sector over the next five years are largely aligned to the CBD obligations.

The establishment of SANBI in 2004 as a science-based organ of state dedicated to biodiversity conservation, with a mandate to play a facilitating, co-ordinating and catalysing role, working in partnership with a range of other organisations in the public, private and NGO sectors, has boosted South Africa's ability respond to its CBD commitments.

South Africa has made progress particularly in the following areas: establishment of a suite of bioregional programmes with a strong focus on the ecosystem approach and on mainstreaming, development of tools for mainstreaming biodiversity in land-use planning and environmental assessment; business and biodiversity initiatives with key production sectors; establishment of stewardship programmes to secure protected area expansion on private land; and most recently the implementation of fiscal incentives to support conservation on private land.

Nevertheless, South Africa faces several challenges with implementing the CBD to achieve its principal objectives.

With the policy and legislative framework now largely in place, together with supporting strategies and frameworks, the focus will shift to implementation and particularly the implementation of the 33 Priority Actions of the NBF by 2013. As highlighted in this report, human capacity is a key constraint, and shortfalls in financial resources present a challenge. If South Africa can successfully implement the Priority Actions of the NBF, it will have made substantial progress in meeting its obligations under the CBD. However, there is no room for complacency and much effort is required by all stakeholders before it can be claimed with confidence that the CBD objectives are being achieved – the limited progress in meeting the 2010 targets provides a strong reminder of the challenges that lie ahead.

Future national reports will be able to highlight progress made and should be supported by more quantitative data reflecting trends once the National Biodiversity Monitoring and Reporting Framework has been established and is fully functional.

4.4.2. Lessons learned

The lessons learnt on implementation of the CBD have been alluded to in the body of the report. In particular, the success in mainstreaming biodiversity through the bioregional and ecosystem programmes (section 3.3.2) and cross-cutting programmes (section 3.2.6) and should be highlighted. Key challenges that have been discussed include cross-sector co-ordination (section 3.2.4), the EIA process that is under review (section 2.8.5), funding for biodiversity conservation (section 2.6) and capacity constraints (section 4.4.3), while specific challenges in implementing NBSAP are highlighted in the assessment of progress under section 2.5.

4.4.3. Future priorities and capacity-building needs

South Africa has put significant effort into establishing a conducive policy, legislative and planning framework for biodiversity management. This has been discussed in section 2, and specifically the National Biodiversity Framework (section 2.3.4) highlights the Priority Actions that will focus the efforts of the biodiversity sector over the next five years. The NPAES is also a key strategy that will provide focus in expanding the protected area network with targets established for both five and twenty years, while the NSBA, whose update is in progress and will be completed in 2010, is an important spatial tool that will both review progress in ecosystem status since 2004 and provide guidance for future geographic priority areas for biodiversity conservation efforts.

A National Capacity Self Assessment exercise has recently being completed that considered the systemic, institutional and individual capacity requirements for the biodiversity sector in South Africa (Turpie & de Wet 2008). The draft report highlights the following recommendations for overcoming the identified capacity constraints:

1) Systemic capacity
    a) Review the overall structure of the biodiversity sector.
    b) Clarify and formalise the roles and responsibilities of overlapping institutions.
    c) Strengthen co-operative governance.
    d) Strengthen development planning and decision mechanisms.
    e) Strengthen conservation extension services.
    f) Strengthen the partnership approach.
    g) Establish a national biodiversity forum.
    h) Devise a strategy to fill information gaps that will assist in fine-scale biodiversity planning and ensure monitoring and evaluation of NBSAP actions.
    i) Review financing strategies.
2) Institutional capacity
    a) Review internal structure with respect to the CBD and clarify allocation of new/changed responsibilities in DEAT.
    b) Improve functioning of Mintech's Biodiversity Working Group 1.
    c) Review internal structure of DWAF with respect to the implementation of integrated water resource management.
    d) Introduce strategies to increase the pool of scientists.
    e) Address lack of enforcement capacity throughout the sector.
    f) Raise appreciation of the CBD and related MEAs among relevant staff in all spheres of government.
3) Individual capacity
    a) Finalise and implement the Human Capital Development Strategy for the biodiversity sector as a holistic, integrated and co-ordinated document to address the current critical short-comings in individual capacity in the sector. The strategy needs to address challenges and blockages at all levels, i.e.
        i) In the educational stages to identify and attract sufficient quality candidates into the sector and to offer appropriate courses;
        ii) In institutions involved in biodiversity management, *inter alia,* to fill staff vacancies and prevent loss of institutional memory caused by high staff turnover; and
        iii) The biodiversity sector needs to pro-actively engage with all relevant stakeholders to co-ordinate individual capacity-building efforts.

4.4.4. Suggestions for action

At this stage South Africa does not have any specific suggestions for action at the regional or global level that will enhance the implementation of the CBD.

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APPENDIX I: Reporting Party and Report Preparation

A. Reporting Party

Contracting Party	**SOUTH AFRICA**
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SUBMISSION	
Signature of officer responsible for submitting national report	
Date of submission	

B. Process of preparation of national report

The Fourth National Report to the Convention of Biological Diversity was prepared during the period October 2008 to February 2009. The South African National Biodiversity Institute (SANBI) led the process of drafting the report, with close assistance and co-operation from the Department of Environmental Affairs and Tourism (DEAT). An independent consulting firm, Anchor Environmental Consultants, was appointed to draft the report, with the following methods used to gather the information:

- A review of relevant legislation, strategies, reports and other documents;
- Information gathering by way of semi-structured interviews with key government and non-government stakeholders and informants;
- A two-day multi-stakeholder workshop at which a draft of the Fourth National Report and progress on NBSAP implementation was discussed. This workshop was attended by some 50 delegates from across the country involved in various parts of the biodiversity sector, many of whom also provided written comments on the draft report.

The consultants were accountable and reported to a steering committee comprised of officials from DEAT and SANBI.

Key documents used as sources during the preparation of the report were:

- National Biodiversity Strategy and Action Plan (NBSAP)
- National Biodiversity Framework (NBF)
- South Africa Environmental Outlook
- National Protected Area Expansion Strategy (NPAES)
- National Freshwater Biodiversity Collaboration (NFBC)
- National Biodiversity Monitoring and Reporting Framework draft documents
- Guideline for Publishing Bioregional Plans
- Millennium Development Goals reports
- Global Strategy for Plant Conservation reports
- South African National Capacity Self Assessment thematic profiles for the CBD, UNCCD and UNFCCC.

APPENDIX II: Further Sources of Information

Additional information is obtainable from:

Information	Organisation	Website address
General information	DEAT	http://www.deat.gov.za/
	SANBI	http://www.sanbi.org/
National government departments	DWAF (Water and forestry resources)	http://www.dwaf.gov.za/
	Department of Agriculture	http://www.nda.agric.za/
Protected areas	SANParks	http://www.sanparks.org/
Bioregional programmes	C.A.P.E.	http://www.capeaction.org.za/
	SKEP	http://www.skep.org/
	Grasslands	http://www.grasslands.org.za/
Business and biodiversity	GreenChoice	http://www.capeaction.org.za/index.php?C=bio&P=2
Spatial biodiversity information and maps	SANBI - BGIS	http://bgis.sanbi.org

APPENDIX IIIA: Progress towards Global Strategy for Plant Conservation (GCPC)

Introduction

South Africa does not have a national focal point for the GSPC, nor a national strategy for plant conservation. However, it recognises that the global strategy is a useful tool to determine priority plant conservation projects and to provide context and direction for projects already being undertaken. SANBI has staff working on eleven of the sixteen GSPC targets and is willing to co-ordinate the development of a national strategy, and is thus well positioned to be the South African national focal point for the GSPC. SANBI published a report in March 2006 entitled *Conserving South Africa's plants: a South African Response to the Global Strategy for Plant Conservation* (Willis 2006) that was shared with the international community through both the Global Partnership for Plant Conservation and at COP 8.

While South Africa recognises the need for a national strategy for plant conservation, it feels that targets should be set at appropriate levels for its floral diversity. Many of the targets in the GSPC need to be lowered for them to be implementable in South Africa. This is due to the extremely high numbers of globally threatened plant species in South Africa (2 577 species). Specific GSPC targets that are likely to require revision in a national strategy are:

- target 5 (Protection of 50 % of the most important areas for plant diversity);
- target 7 (60% of the world's threatened species conserved *in situ*);
- target 8 (60% of threatened plants in accessible *ex situ* collections, preferably in the country of origin, and 10% included in recovery plans).

Financial support programmes are important for assisting developing countries to achieve the targets of the GSPC. Support from the Norwegian Government has enabled South Africa to focus on reaching by 2010:

- target 2 (A preliminary assessment of the conservation status of all known plant species at national, regional and international levels);
- target 15 (The number of trained people working with appropriate facilities in plant conservation increased);
- target 16 (Networks for plant conservation activities established or strengthened at national, regional and international levels).

South Africa has good relationships with plant conservation practitioners in its neighbouring countries that have been developed through the Southern African Botanical Diversity Network (SABONET) programme, although these relationships need to be maintained and strengthened on a regular basis. In addition, through the existing network of volunteer scientists that belong to the IUCN Species Survival Commission's Southern African Plant Specialist Group, South Africa will be able to work with neighbouring countries to develop national strategies for implementation of the GSPC.

SANBI has actively participated, on behalf of South Africa, as a member of the Global Partnership for Plant Conservation (GPPC), and contributed towards the preparation of the Plant Conservation Report that was prepared for COP 9 as a communication and awareness-raising tool on the implementation of the GSPC. At COP 9 in 2008, it was agreed that the GSPC would be extended beyond 2010, with COP 10 in 2010 to consider and set amended GSPC targets for the future years.

South Africa's limited progress in achieving some of the GSPC targets is largely due to it not having a national focal point or a national strategy; nevertheless existing programmes and projects, particularly through the bioregional programmes discussed in section 3.3.2 of the main report, have contributed towards the conservation of plants in the country. It is acknowledged that greater resources will have to be invested in co-ordinating plant conservation efforts and broader involvement is required in implementing the GSPC to conserve South Africa's rich plant diversity (Willis 2006). In addition, realistic targets need to be set at a national level and mechanisms for monitoring, reporting and evaluating progress will have to be put in place. An immediate priority to achieving the GSPC is for SANBI to be nominated as a focal point so that the institute can lead the development of a national strategy for plant conservation in which the global targets are revised.

An overview of the current status of implementation of the GSPC targets, highlighting the achievements and challenges, is summarised in tabular form below. Information has been largely obtained from Willis (2006).

Target 1: ***A widely accessible working list of known plant species, as a step towards a complete world flora.***

GSPC Target 1: Progress, challenges and priorities.

Progress	• **Compilation of comprehensive species list for southern Africa initiated 20 years ago with National Herbarium Computerised Information System (PRECIS) which generates list of *Flora of southern Africa* – most recent update published in 2006.** • **First exclusively South African list that covers the basic biology of 21 721 indigenous and exotic plant taxa that occur in the country was published in 2006.** • **Plant inventories and checklists published for numerous plant diversity components, including: poisonous plants; fungi and lichens; common names; bryophytes; bryophytes, pteridophytes, gymnosperms & angiosperms; green, brown and red algae; cryptogams, gymnosperms & monocotyledons; problem plants; dicotyledons; grasses; succulent plants; aquatic plants; medicinal plants and cultivated plants** • **SANBI co-provided leadership to initiate Species Plantarum-Flora of the World Programme and South African taxonomists have contributed several published volumes under this programme** • **Plants of Southern Africa is available free of charge on the worldwide web**
Challenges	• Maintaining updated checklists as new species are discovered and described, or existing taxonomies are refined • Over 30% of South Africa's plant species still have no recent taxonomic treatment, resulting in knowledge of the species distribution and characters for identification not being known. Such species cannot have their conservation status assessed and this limits our effective conservation of a large proportion of our flora.
Priorities	• Prioritising revision of plant groups that have either never been revised or which have not been revised for over 80 years. • Increase use of electronic methods to disseminate botanical information.

Target 2: ***A preliminary assessment of the conservation status of all known plant species, at national, regional and international levels***

GSPC Target 2: Progress, challenges and priorities.

Progress	• **SANBI has been involved for 8 years in conducting red list conservation status assessments for all of South Africa's 20 500 indigenous plant taxa in line with IUCN 3.1 criteria. This assessment is complete and will be published in 2009.** • **SANBI co-ordinates a network of civil society volunteer to monitor the status of threatened plants in the field via the CREW programme.**
Challenges	• Production of Red List assessment took 8 years instead of the originally planned 3 years • Accurate conservation assessment limited by : o Lack of adequate taxonomic revisions for flora, especially in Asteraceae and Mesembryanthemaceae families o Lack of recent field surveys resulted in relying on using Herbarium data that do not have population level or threat information
Priorities	• Maintenance of up to date Red List assessments for 20500 plant taxa Red Data Lists • Production and maintenance of Red Data Lists throughout Southern Africa through the IUCN Southern Africa Plant Specialist Group, which is hosted by SANBI, including collaboration for regional Red List assessments

T**arget 3**: ***Development of models with protocols for plant conservation and sustainable use, based on research and practical experience***

GSPC Target 3: Progress, challenges and priorities.

Progress	• **Articles published on propagation and cultivation of succulent plants** • **Information generated through research conducted by Millennium Seedbank Project by production of threatened species dossiers that contain information about plant populations in the wild, germination protocols, propagation methods and recommendations for *in situ* and *ex situ* conservation** • **Information available on the SANBI website on South Africa's indigenous plants including uses, habitat, distribution, ecology, cultural aspects and propagation techniques** • **Handbook *Growing rare plants* published on propagating threatened species]** • **Production of the first Biodiversity Management Plan for a high value medicinal plant *Pelargonium sidoides* as legislated in the Biodiversity Act is currently being piloted.**
Challenges	• Methods of propagation and cultivation of threatened plants generally not documented by amateur and professional members of botanical community • Lack of co-ordination for protocols on plant conservation and sustainable use • On-the-ground conservation implementers lack access to information from unpublished protocols and results from applied research
Priorities	• Development of a central database or national clearing house mechanism that contains methodologies and protocols for conservation and sustainable use of plants • Make information available electronically • Co-ordination of lessons learnt in plant conservation and sustainable use • Document *in situ* conservation methods and integrate *in situ* and *ex situ* conservation

Target 4: ***At least 10 per cent of each of the world's ecological regions effectively conserved***

GSPC Target 4: Progress, challenges and priorities.

Progress	• **6.5% of South Africa's land area is protected** • **NPAES contains 20-year targets for each of South Africa's 440 vegetation types (refer to section 2.5.2) to increase representation of ecosystems in the protected area network**
Challenges	• Of the 45 ecological regions in the country, 11 have almost no formal protection and only 10 have 10% or more of their original extent protected • No measure of management effectiveness of protected areas
Priorities	• Implementation of NPAES to increase representation of conserved ecological regions • Listing of threatened ecosystems under the Biodiversity Act to assist in reducing habitat loss

Target 5*: Protection of 50 per cent of the most important areas for plant diversity assured*

GSPC Target 5: Progress, challenges and priorities.

Progress	• **Concept of Important Plant Areas (IPAS) initiated in 2004 to raise awareness of plant conservation** • **South Africa does not only focus on Important Plant Areas for conservation but rather has adopted the systematic conservation planning approach which was applied in NSBA and NPAES. These together with provincial biodiversity plans, highlights priority areas for protection of all biodiversity including plants** • **Biome and ecosystem programmes include many of the areas and centres of plant endemism (refer to section 3.3.2)** • **SANBI's threatened species' programme has 23 volunteer groups based in priority areas for plant conservation – these groups work closely with regional stewardship programmes to ensure the conservation of private and communally owned priority sites for plant conservation.** • **Three of the nine provinces have included threatened plant populations as targets for their biodiversity conservation plans.** • **Five fine-scale conservation plans conducted for the Cape Floral Kingdom that include specific targets for conserving adequate populations of threatened plant species – these plans include 49.8% of the listed threatened species occurring in the Cape Floral Kingdom**
Challenges	• Many Important Plant Areas are not protected • Fine scale data on the distribution of threatened plants not available expect for Western Cape making the identification of IPAS difficult.
Priorities	• Update NSBA planned for 2010 • Produce national fine scale layer of threatened plant distributions • Implement NPAES to get focus areas into protected area network

Target 6: ***At least 30 per cent of production lands managed consistent with the conservation of plant diversity***

GSPC Target 6: Strategies, progress, challenges and priorities.

Progress	• **Biome and ecosystem programmes have projects that address biodiversity at the landscape level and aim to mainstream biodiversity in various production sectors (refer to section 3.3.2)** • **Several business and biodiversity initiatives being implemented (refer to section 3.2.7)**
Challenges	• Funding for initiating and sustaining biodiversity programmes in production sectors
Priorities	• Increase number of sectors involved in biodiversity friendly production methods • Increase number of participants in the production sector initiatives

Target 7: ***60 per cent of the world's threatened species conserved in situ***

GSPC Target 7: Strategies, progress, challenges and priorities.

Progress	• **45% of threatened plant species in the Cape Floral Kingdom have at least one population in formal or private conservation areas, with 37% in formally protected areas** • **NSBA used data on threatened and endemic plants as one of main factors in determining the country's priority conservation areas** • **NPAES contains 20-year targets(refer to section 2.5.2) to increase representation of protected ecosystems**
Challenges	• Coarse scale of distribution data on most plant species means it is not possible to determine the numbers of species represented in the protected area network – fine scale data are only available for the Cape Floral Kingdom, where 72% of South Africa's threatened species occur • Occurrence of species in a protected area does not ensure its survival in the wild, as evidenced by the extinction of six cycad species over the last hundred years due to over-harvesting for horticultural trade, two of which have gone extinct in the wild in the last 5 years. • Resources and capacity to enforce laws protecting threatened species
Priorities	• The production of a nation wide fine scale layer of the distribution of threatened plants via encoding and geo-referencing of herbarium records and conducting ongoing field surveys. • Update of NSBA on track for 2010 • Implement NPAES

Target 8: ***60 per cent of threatened plant species in accessible ex situ collections, preferably in the country of origin, and 10 per cent of them included in recovery and restoration programmes***

GSPC Target 8: Progress, challenges and priorities.

Progress	• **Network of nine national botanical gardens which, *inter alia*, focus on conservation of South Africa's indigenous plants** • **Survey in 2002 revealed that 39% of South Africa's indigenous plants are grown in national botanical gardens with 813 Red List plant species represented, of which 384 are threatened, 15% of the 2577 species listed as threatened in the country.** • **Millennium Seed Bank Project established by SANBI and the Royal Botanical Gardens, Kew, and aims to have at least 2 500 of South Africa's indigenous**

	plants conserved at *ex situ* collections and to duplicate collections at a national seed banking facility by 2010. By March 2008, 2 250 plant species had been collected of which 205 are threatened. • **Universities and municipal botanical gardens also involved in conserving threatened plant species** • **Botanical Society of South Africa, established in 1913 as an NGO to promote plant conservation**
Challenges	• Efforts at reintroduction and restoration of threatened plants have been limited • Capacity and resources at national botanical gardens, particularly to ensure protection of species in line with updated Red Data List limited. • Limited collaboration and co-ordination between various holders of *ex situ* collections, including private collections
Priorities	• Updated survey of plants in national botanical gardens based on 2009 Red Data List • Increasing the number of critically endangered, endangered and vulnerable species in national botanical gardens as current focus is on lower priority taxa • Conservation priority for species of economic importance, special scientific interest or "flagship" species that will stimulate conservation awareness • Integration of *in situ* and *ex situ* conservation efforts

Target 9: ***70 per cent of the genetic diversity of crops and other major socio-economically valuable plant species conserved, and associated indigenous and local knowledge maintained***

GSPC Target 9: Progress, challenges and priorities.

Progress	• **Conservation and utilisation of plant genetic resources for food and agriculture a prime function of the Directorate: Genetic Resources Management of the national Department of Agriculture** • **National Plant Genetic Resources Centre established under the above directorate with mandate to collect and conserve several species – a total of 436 priority species divided into seven groups have been identified** • **Agricultural Research Council – Livestock Business Division Forage Genebank holds a collection of approximately 8 000 accessions, including grass and legume accessions, mainly with fodder value for livestock but some species can be used for purposes such as rehabilitation and erosion control**
Challenges	• Conservation of existing indigenous crop landraces (crops that have become locally adapted) and re-introduction of these adapted ecovars into agricultural areas • Plants harvested in the wild for medicinal purposes are threatened by over-harvesting
Priorities	• Focus on eco-geographic coverage and diversity studies to contribute to gap analysis of landrace crop collections • Collection and *ex situ* conservation of wild crop relatives and prioritised wild species used for food and agriculture • Conservation of diversity in expanded genebanks and nurseries, with focus on increasing indigenous legume holdings in Agricultural Research Council – Livestock Business Division Forage Genebank • Education and creating awareness of the role of cultivated crops amongst the farming community, general public and consumers

Target 10: ***Management plans in place for at least 100 major alien species that threaten plants, plant communities and associated habitats and ecosystems***

GSPC Target 10: Strategies, progress, challenges and priorities.

Progress	• **Southern African Plant Invaders Atlas is a computerised database that catalogues localities of naturalised and invasive plants in the region with 60 000 records of 600 taxa and is published as a resource for planning and effective control of IAS** • **Working for Water programme established in 1995 to reduce invasion of alien invasive vegetation and still active with R470 million spent on the programme in 2006/07 and 813 471 ha treated for IAS** • **Classification system for IAS defines 117 major IAS categorised into groups based on the geographic range and abundance with 84 minor and emerging IAS identified** • **Centre for Invasion Biology established in 2004 and provides platform and critical mass for research on key issues related to the management of IAS** • **Nurseries Partnership Project established to address the problem of alien plants within the nursery industry and the gardening public** • **96 biological control agents released to target 42 plant species under the auspices of the Plant Protection Research Institute**
Challenges	• Capacity and resources to effectively implement IAS programmes • Lack of public awareness of extent of problem
Priorities	• Finalise IAS regulations • Implement IAS regulations • Ongoing research to provide scientific basis for IAS programmes and priorities

Target 11: ***No species of wild flora endangered by international trade***

GSPC Target 11: Strategies, progress, challenges and priorities.

Progress	• **Threatened or Protected Species (TOPS) regulations under the Biodiversity Act came into effect in 2008 and institute a permit system for listed species** • **Plants listed on CITES appendices – 42 on Appendix 1 and 963 on Appendix 2** • **Projects to promote cultivation of certain species to reduce pressure on wild populations** • **Biome and ecosystem programmes and business initiatives in production sectors such as fynbos and rooibos tea aim to promote sustainable harvesting**
Challenges	• Extent and impact of trade is poorly known but it is estimated that some 40 plant species are threatened in part by international trade, while an estimated 550 species of plant are also traded for medicinal and traditional purposes in South Africa and with neighbouring countries • Cycads and succulents are particularly threatened by trade with illegal harvesting resulting in two species of cycad recently being classified as Extinct in the Wild • Capacity and resources to enforce laws on illegal harvesting • Large gaps exist in knowledge on current harvesting levels, impacts on populations and sustainable levels of harvesting • Limited knowledge on the trade in plants as most of this trade is unregulated.
Priorities	• Develop management plans for species harvested based on understanding of sustainable harvesting • Improve knowledge of trade dynamics in affected species • Find solutions for unregulated trade in medicinal plants • Enhance monitoring of species potentially threatened by trade

Target 12: ***30 percent of plant-based products derived from sources that are sustainably managed***

GSPC Target 12: Progress, challenges and priorities.

Progress	• **Growing trend towards organic methods in agricultural sector with 515 000 ha of organically certified farmland** • **AFRISCO Pty and Fair Trade South Africa established to promote ethical and certifiable production of plant products** • **80% of commercial forest plantations managed according to Forest Stewardship Council international standards** • **Biome and ecosystem programmes and business initiatives in production sectors such as wine, fynbos and rooibos tea aim to promote sustainable harvesting** • **Commercial Products from the Wild (CPWild) established as multi-disciplinary initiative between academics, professionals and practitioners to facilitate establishment of enterprises for sustainable use of indigenous plants in rural communities** • **Publication of *Southern African Trade Directory of Indigenous Natural Products* as resource for identifying players and key issues in natural product sector** • **Several initiatives launched to assist in development of a sustainable and beneficial natural product sector for South Africa. These seek to address policy, capacity and information needs as well as promoting improved resource harvesting methods, indigenous plant seed collection and cultivation and supporting enterprises**
Challenges	• Lack of information and co-ordination • Harvesting and trade largely unregulated but rural communities rely on plant resources for food, fuel, medicine and building material
Priorities	• Enhance knowledge of indigenous plant use and trade in the country • Policy on organically certified agriculture to assist with the management and conservation of plant resources

Target 13: ***The decline of plant resources, and associated indigenous and local knowledge innovations and practices, that support sustainable livelihoods, local food security and health care, halted***

GSPC Target 13: Progress, challenges and priorities.

Progress	• **Regulation on Bioprospecting, access and benefit sharing came into effect in 2008 – commercial development of traditional practices requires the approval and involvement of the holders of such knowledge and benefits arising from any development must be shared equitably** • **Indigenous Knowledge Systems policy in place** • **Efforts made to document traditional plant use information and several publications have been released** • **Research and studies into character of trade in medicinal plants has provided information on utilisation of species to assist in conservation efforts – estimates are that some 3 500 species are used by 28 million people in South Africa who consume approximately 19 500 tonnes of medicinal plants each year** • **PRECIS system provides information on national ethno-medicinal flora** • **Projects to establish medicinal plant nurseries where species can be propagated and cultivated** • **Regulations on ABS came into effect in 2008**

Challenges	• Over harvesting of medicinal plant resources • Limited capacity to implement ABS regulations
Priorities	• Finalise Policy Framework for the Protection of Indigenous Traditional Knowledge and related amendments to Intellectual Property System legislation – draft bill was presented for public comment during 2008

Target 14: ***The importance of plant diversity and the need for its conservation incorporated into communication, education and public awareness programmes***

GSPC Target 14: Progress, challenges and priorities.

Progress	• **Several programmes, partnerships and activities include a focus on plant diversity and its conservation at national botanical gardens, national parks and environmental education centres - for example SANBI has several programmes including the Garden Based Biodiversity Education and Empowerment Programme (over 40 000 learners participated in this in 2007/08), Outreach Greening (approximately 50 schools active in 2007/08) and Greening the Nation (seven projects covering 250 schools, 30 community projects and six nurseries in 2007/08)** • **Vibrant and active environmental education sector with a number of NGOs involved in programmes that include plant conservation** • **Several environmental calendar days are observed in South Africa, with National Arbour Week prominent with a focus on plant diversity and its importance** • **SANBI co-ordinates plant monitoring day which involves 300 learners across the country in monitoring threatened plants, this programme is being expanded into all priority areas for threatened plant conservation.** • **Training is an integral part of EPWP projects such as Working for Water**
Challenges	• Funding for environmental education and related programmes • General lack of awareness of biodiversity and its important role, including plants, amongst the public • Lack of co-ordination of environmental education and awareness programmes
Priorities	• Increase scope and effectiveness of environmental education, outreach and awareness raising initiatives • Measuring and evaluating effectiveness of programmes

Target 15: ***The number of trained people working with appropriate facilities in plant conservation increased, according to national needs, to achieve the targets of this Strategy***

GSPC Target 15: Targets, progress, challenges and priorities.

Progress	• **Southern African Botanical Diversity Network (SABONET) offered 29 training courses and gave 220 southern African botanists the opportunity to develop specialised skills in plant conservation** • **Indigenous plant horticultural training takes place at national botanical gardens and in the private sector** • **Ongoing staff development at SANBI including staff bursary schemes, training courses and internship programmes** • **SANBI's threatened plant programme provides training to 250 civil society volunteers on indigenous plant identification and conservation.**
Challenges	• Resources and capacity, including facilities (herbaria and laboratories) and equipment (field equipment and vehicles), for scientific community • Ageing pool of scientists, especially taxonomists, with many leaving formal employment, leading to loss of institutional memory, or the country

	• Attracting new entrants to the botanical sector as well as funding for research at the masters and doctorate levels
Priorities	• The Human Capital Development process which will develop a human capital development strategy for the environmental sector - the strategy will seek to address transformation and the challenge of scarce skills in the sector

Target 16: ***Networks for plant conservation activities established or strengthened at national, regional and international levels***

GSPC Target 16: Targets, progress, challenges and priorities.

Progress	• **GEF / UNDP funded the Southern African Botanical Diversity Network (SABONET) - involved ten southern African countries with a primary objective to build a strong core of professional botanists, taxonomists, horticulturists and plant diversity specialists** • **African Botanic Gardens Network established in 2002 to support the work of botanic gardens through education, conservation and sustainable use of plants for development, poverty alleviation and halting biodiversity loss** • **Biome and ecosystem programmes are example of national networks and SKEP is being jointly implemented with Namibia – refer to discussion in section 3.3.2** • **Several Transfrontier Conservation Area projects being implemented with neighbouring countries – see Box 20** • **SANBI is involved in international collaboration in several areas on an ongoing basis**
Challenges	• Funding for ongoing collaboration projects such as SABONET
Priorities	• Strengthen national relationships between provincial conservation authorities and SANBI, to achieve both *in situ* and *ex situ* conservation targets. • Develop regional relationships via the Southern African IUCN plant specialist group to achieve targets 1 and 2 of the GSPC. • Collaborate regionally to develop regional management plans for utilised plant species that are traded internationally and whose natural distribution ranges over a number of Southern African countries.

APPENDIX IIIB: Progress towards Programme of Work on Protected Areas

Introduction

South Africa has a long established network of terrestrial protected areas while Marine Protected Areas have been established more recently. The Protected Areas Act (57 of 2003) is the key legislative instrument that provides for the protection and conservation of ecologically viable areas representative of South Africa's biodiversity and its natural landscapes and seascapes through a classification system comprising Special Nature Reserves, National Parks, Nature Reserves and Protected Environments. The Protected Areas Act further provides for the management of protected areas. Management authorities for protected areas are mainly conservation agencies and these have been established at a national (SANParks) and provincial level.

The National Protected Area Expansion Strategy (NPAES) has been discussed in section 2.5.2 and aims to achieve cost effective protected area expansion for ecological sustainability and increased resilience to climate change. The NPAES sets out five- and twenty-year targets for protected area expansion. As the NPAES was only approved in early 2009, implementation is still in the early stages. South Africa's progress towards the Protected Area Programme of Work needs to be viewed in this light as many of the targets under this programme are at an early stage and while there is currently only limited progress to report, successful implementation of the NPAES will enable progress to be reported in future reports. The targets, progress and challenges are set out for each Protected Areas Program of Work goal in tabular form.

Goal 1.1: ***To establish and strengthen national and regional systems of protected areas integrated into a global network as a contribution to globally agreed goals***

PA Goal 1.1: Targets, progress, challenges and priorities

CBD Target	**By 2010, terrestrially[8] and 2012 in the marine area, a global network of comprehensive, representative and effectively managed national and regional protected area system is established as a contribution to** • **(i) the goal of the Strategic Plan of the Convention and the World Summit on Sustainable Development of achieving a significant reduction in the rate of biodiversity loss by 2010;** • **(ii) the Millennium Development Goals – particularly goal 7 on ensuring environmental sustainability; and** • **(iii) the Global Strategy for Plant Conservation**
Targets and strategies	• NPAES and associated targets for terrestrial and marine protected areas (refer to section 2.5.2) • Offshore Marine Protected Areas Project established and guidelines for Offshore MPAs issued (refer to section 3.3.2)
Progress	• Current level of protection is 6.5% of land ; 21.5% marine inshore (9.1% no-take) and 0.2% of marine offshore • The Protected Areas Act provides various tools to enable protected area expansion on private land
Challenges	• Finance for protected area expansion • Incorporating a representative sample of different ecosystems into the protected area network
Priorities	• Implement NPAES, with focus on priority areas identified therein • Implement Offshore MPAs

[8] Terrestrial includes inland water ecosystems

Goal 1.2: ***To integrate protected areas into broader land- and seascapes and sectors so as to maintain ecological structure and function***

PA Goal 1.2: Targets, progress, challenges and priorities

CBD Target	• **By 2015, all protected areas and protected area systems are integrated into the wider land- and seascape, and relevant sectors, by applying the ecosystem approach and taking into account ecological connectivity and the concept, where appropriate, of ecological networks.**
Targets and strategies	• NPEAS • Offshore Marine Protected Areas Project • National Freshwater Ecosystems Priority Areas (NFEPA) (refer to section 2.5.3)
Progress	• Ecosystem approach applied in relevant conservation planning and programmes, including NPAES and the bioregional and ecosystem programmes such as C.A.P.E., SKEP and Grasslands • Biodiversity stewardship programmes established in certain provinces • Transfrontier Conservation Areas, World Heritage Sites and Biosphere Reserves established • Ecological corridors between important biodiversity areas established in bioregional programmes such as C.A.P.E. and SKEP
Challenges	• Securing important biodiversity land for protected area network
Priorities	• Implement NPAES • Securing adequate financial resources to ensure sustainability of bioregional and ecosystem programmes

Goal 1.3: ***To establish and strengthen regional networks, transboundary protected areas (TBPAs) and collaboration between neighbouring protected areas across national boundaries***

PA Goal 1.3: Targets, progress, challenges and priorities

CBB Target	**Establish and strengthen by 2010/2012 transboundary protected areas, other forms of collaboration between neighbouring protected areas across national boundaries and regional networks, to enhance the conservation and sustainable use of biological diversity, implementing the ecosystem approach, and improving international co-operation**
Targets and strategies	• NBF contains specific Priority Activities over next five years relating to regional co-operation, including developing partnerships and co-operative arrangements with neighbouring countries regarding shared resources
Progress	• Six TFCAs established with neighbouring countries (refer to Box 20) • Regional co-operation through SADC protocols on Wildlife, Water and Forests • Party to several agreements relating to shared water resources
Challenges	• Security issues regarding movement of tourists across international boundaries • Resources and capacity to implement TFCAs
Priorities	• Implementation of TFCAs to generate biodiversity and socio-economic benefits

Goal 1.4: ***To substantially improve site-based protected area planning and management***

PA Goal 1.4: Targets, progress, challenges and priorities

CBD Target	• **All protected areas to have effective management in existence by 2012, using participatory and science-based site planning processes that incorporate clear biodiversity objectives, targets, management strategies and monitoring programmes, drawing upon existing methodologies and a long-term management plan with active stakeholder involvement**
Targets and strategies	• NPAES • National Spatial Biodiversity Assessment • Provincial Spatial Biodiversity Plans • Management Plans are a legislated requirement of the Protected Areas Act
Progress	• Systematic biodiversity planning techniques used to inform NPAES priority focus areas for protected area expansion and Provincial Spatial Biodiversity Plans • NBSA to be updated by 2010 • Provincial Spatial Biodiversity Plans developed or in progress • Management plans for all national parks developed and at provincial level are developed or in process. Public participation is a requirement in developing these plans
Challenges	• Resources and capacity to implement the management plans
Priorities	• Update NSBA in 2010 • Develop outstanding management plans for protected areas • Secure resources and capacity for effective management of protected areas

Goal 1.5: ***To prevent and mitigate the negative impacts of key threats to protected areas***

PA Goal 1.5: Targets, progress, challenges and priorities

CBD Target	**By 2008, effective mechanisms for identifying and preventing, and/or mitigating the negative impacts of key threats to protected areas are in place.**
Targets and strategies	• NPAES and focus areas for expansion • Offshore Marine Protected Area Guidelines
Progress	• NPAES and Offshore Marine Protected Area guidelines take cognisance of threats, including climate change, habitat loss and degradation; alien invasive species etc. • Threats and responses are part of the protected area management plans required under the Protected Areas Act
Challenges	• Alien invasive species strategy outstanding • Activities outside of protected areas potentially have negative impacts within the protected areas, especially in river systems • Co-ordinating standard response to threats across the provinces • Resources and capacity to deal with threats
Priorities	• Implement NPAES, especially focus priority areas • Implement Offshore MPA guidelines • Finalise Alien Invasive Species Strategy • Implement protected area management plans, including securing resources for implementation

Goal 2.1: *To promote equity and benefit-sharing*

PA Goal 2.1: Targets, progress, challenges and priorities

CBD Target	• **Establish by 2008 mechanisms for the equitable sharing of both costs and benefits arising from the establishment and management of protected areas**
Targets and strategies	• The Biodiversity Act and Regulations on Bio-prospecting, Access and Benefit Sharing • People and Parks Programme
Progress	• ABS Regulations came into effect in 2008 • Examples of successful projects where communities benefit from protected areas through tourism operations established as part of South Africa's land reform process • Models being developed for co-management and benefit sharing between the state and communities in land reform situations • People and Parks programme established - looks at the role that protected areas play in local economic growth with following thematic areas: Co-management; Access and Benefit Sharing; Land Reform and Conservation; Community Public Private Partnerships; Expanding and Strengthening the Protected Area Network and Implementing the Protected Areas Act • Conservation agencies have programmes that focus on community-based conservation; for example, in 2007/08 SANParks had 65 community projects that generated income of over R3 million for communities
Challenges	• Resources and capacity to implement co-management and benefit sharing arrangements in protected areas • Slow and complicated process to settle claims on protected areas
Priorities	• Finalise land reform including settlement of all land claims on protected areas to realise conservation and socio-economic objectives • Implement People and Parks strategic focus areas

Goal 2.2: ***To enhance and secure involvement of indigenous and local communities and relevant stakeholders***

PA Goal 2.2: Targets, progress, challenges and priorities

CBD Target	• **Full and effective participation by 2008, of indigenous and local communities, in full respect of their rights and recognition of their responsibilities, consistent with national law and applicable international obligations, and the participation of relevant stakeholders, in the management of existing, and the establishment and management of new, protected areas**
Targets and strategies	• People and Parks Programme
Progress	• People and Parks programme established and in progress of implementation • Co-management models being developed and implemented • Some conservation agencies have forums for community participation in protected area management; for example, KZN Wildlife has Local Boards for several of its reserves
Challenges	• Capacity within agencies and communities for effective co-management and participation
Priorities	• Finalise land claims • Capacity building to implement People and Parks objectives, including Co-management

Goal 3.1: ***To provide an enabling policy, institutional and socio-economic environment for protected areas***

PA Goal 3.1: Targets, progress, challenges and priorities

CBD Target	• **By 2008 review and revise policies as appropriate, including use of social and economic valuation and incentives, to provide a supportive enabling environment for more effective establishment and management of protected areas and protected areas systems**
Targets and strategies	• The Protected Areas Act • NPAES • Bioregional and ecosystem programmes • People and Parks programme
Progress	• Progress being made with fiscal incentives for protected area expansion (refer to section 3.2.8) • Bioregional and ecosystem programmes such as C.A.P.E., SKEP and Grasslands being implemented to integrate socio-economic and conservation priorities (refer section 3.3.2) • Stewardship programmes established and being implemented • Conservation agencies focus on generating socio-economic benefits from protected areas through projects, education, awareness and research
Challenges	• Sustainability of bioregional and ecosystem programmes once donor finance for initial planning and establishment phases ends
Priorities	• Implement NPAES • Measures to ensure adoption of available fiscal incentives

Goal 3.2: ***To build capacity for the planning, establishment and management of protected areas***

PA Goal 3.2: Targets, progress, challenges and priorities

CBD Target	• **By 2010, comprehensive capacity-building programmes and initiatives are implemented to develop knowledge and skills at individual, community and institutional levels, and raise professional standards**
Targets and strategies	• People and Parks programme • Human Capital Development project for the biodiversity sector - strategy will seek to address transformation and the challenge of scarce skills in the sector.
Progress	• Human Capital Development project initiated • Most conservation agencies provide ongoing training programmes to strengthen capacity of their staff
Challenges	• Limited pool of qualified and skilled people for conservation management • Loss of institutional memory with experienced staff leaving conservation agencies
Priorities	• Implement People and Parks capacity building programme • Finalise and implement human capital development strategy

Goal 3.3: ***To develop, apply and transfer appropriate technologies for protected areas***

PA Goal 3.3: Targets, progress, challenges and priorities.

CBD Target	• **By 2010 the development, validation, and transfer of appropriate technologies and innovative approaches for the effective management of protected areas is substantially improved, taking into account decisions of the Conference of the Parties on technology transfer and co-operation**
Targets and strategies	• No specific targets or strategies developed
Progress	• Limited progress to report
Challenges	• Not a focus area
Priorities	• Not a priority area

Goal 3.2: ***To ensure financial sustainability of protected areas and national and regional systems of protected areas***

PA Goal 3.4: Targets, progress, challenges and priorities

CBD Target	• **By 2008, sufficient financial, technical and other resources to meet the costs to effectively implement and manage national and regional systems of protected areas are secured, including both from national and international sources, particularly to support the needs of developing countries and countries with economies in transition and small island developing States**
Targets and strategies	• Financial strategies developed at conservation agency level
Progress	• International funding mobilised for the various bioregional and ecosystem programmes • Most conservation authorities are able to generate and retain revenue from tourism other activities in the protected areas
Challenges	• Current funding generally considered insufficient for effective management of protected areas • Government funding for biodiversity conservation and protected areas unlikely to increase significantly in the future • International funding for bioregional and ecosystem programmes and other priority interventions (Working for Water etc – refer to section 2.6.4) of a short-term nature
Priorities	• Develop sustainable strategies for protected area funding with reference to the NBF costing implementation exercise (refer to section 2.6.5)

Goal 3.5: ***To strengthen communication, education and public awareness***

PA Goal 3.5: Targets, progress, challenges and priorities

CBD Target	• **By 2008 public awareness, understanding and appreciation of the importance and benefits of protected areas is significantly increased**
Targets and strategies	• No overriding strategy but SANBI, SANParks and other conservation agencies have their own programmes
Progress	• SANBI has Biodiversity Education and Empowerment Division involved in various environmental and outreach programmes • SANParks People and Conservation Division involved in environmental education and youth development – in 2007/08 over 4 500 learners and 277 educators participated in Kids in Parks programme • National Parks Week used to highlight protected areas to public • Several NGOs involved in environmental education

Challenges	• Public generally not aware of import role that protected areas play in ecosystems – mainly seen as tourist attraction
Priorities	• Expand environmental education and awareness raising initiatives

Goal 4.1: ***To develop and adopt minimum standards and best practices for national and regional protected area systems***

PA Goal 4.1: Targets, progress, challenges and priorities

CBD Target	• **By 2008, standards, criteria, and best practices for planning, selecting, establishing, managing and governance of national and regional systems of protected areas are developed and adopted**
Targets and strategies	• NPAES • NSBA
Progress	• NPAES identifies factors (importance and urgency) to select priority areas for protected area expansion and uses results of this framework to identify 42 focus areas for expansion
Challenges	• Resources and capacity to implement NPAES and incorporate focus areas into protected area network
Priorities	• Update NSBA in 2010 • Implement NPAES

Goal 4.2: ***To evaluate and improve the effectiveness of protected areas management***

PA Goal 4.2: Targets, progress, challenges and priorities

CBD Target	• **By 2010, frameworks for monitoring, evaluating and reporting protected areas management effectiveness at sites, national and regional systems, and transboundary protected area levels adopted and implemented by Parties**
Targets and strategies	• Under the Protected Areas Act indicators for monitoring performance with regard to management of protected areas and conservation of biodiversity in these areas may be established
Progress	• A nationwide study of MPA effectiveness using METT and a South African questionnaire was conducted in 2008 and will be concluded in 2009.
Challenges	• No systems in place to measure effectiveness of management of protected areas
Priorities	• Establish protected area management effectiveness framework

Goal 4.3: ***To assess and monitor protected area status and trends***

PA Goal 4.3: Targets, progress, challenges and priorities

CBD Target	• **By 2010, national and regional systems are established to enable effective monitoring of protected-area coverage, status and trends at national, regional and global scales, and to assist in evaluating progress in meeting global biodiversity targets**
Targets and strategies	• NPAES • National Biodiversity Monitoring and Reporting Framework • NSBA
Progress	• Register of Protected Areas required by the Protected Areas Act and established by DEAT. Further work required to ensure that register is fully populated and up to date. • NSBA to be updated in 2010

Challenges	•
Priorities	• Revitalisation of Protected Areas Forum as recommended in NPAES, to play a key role in co-ordinating and monitoring implementation of NPAES

Goal 4.4: ***To ensure that scientific knowledge contributes to the establishment and effectiveness of protected areas and protected area systems***

PA Goal 4.4: Targets, progress, challenges and priorities

CBD Target	• **Scientific knowledge relevant to protected areas is further developed as a contribution to their establishment, effectiveness, and management**
Targets and strategies	• No specific targets or strategies for protected area scientific knowledge
Progress	• Several academic and research institutions involved in research relevant to many aspects of protected areas (conservation planning; ecosystems species; social dynamics etc) • Most conservation agencies have scientific units and are involved in research. For example, SANParks has 423 projects registered under its research programme
Challenges	• Limited inter-disciplinary research i.e. integrating social and biodiversity • Limited resources for research programmes • Ensuring that there is a pool of emerging scientists
Priorities	• Protected area research priorities to be included in national biodiversity research strategy (NBF Priority Action 10)