environmental affairs

Department:
Environmental Affairs
REPUBLIC OF SOUTH AFRICA

South Africa's 2nd National Biodiversity Strategy and Action Plan 2015 – 2025

Final version

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Department of Environmental Affairs

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Acronyms & abbreviations

Acronym	Name
ABI	Agulhas Biodiversity Initiative
ACAP	Agreement on the Conservation of Albatrosses and Petrels
ACCESS	Applied Centre for Climate and Earth Systems Science
ACT	African Conservation Trust
ADU	Avian Demography Unity
AHTEG	Ad Hoc Technical Expert Group
ARC	Agricultural Research Council
BABS	Bio-prospecting, Access and Benefit Sharing
BCOCC	Border Control Operational Coordination Committee
BHCDS	Biodiversity Human Capital Development Strategy
BIOFIN	Biodiversity Finance Initiative
BMP-E	Biodiversity Management Plans for Ecosystems
BMP-S	Biodiversity Management Plans for Species
BotSoc	Botanical Society of South Africa
CARA	Conservation of Agriculture Resources Act
CATHSSETA	Culture, Arts, Tourism, Hospitality, Sports Sector Education Training Authority
CBD	Convention on Biological Diversity
CBO	Community Based Organisation
CCAMLR	Commission for the Conservation of Antarctic Marine Living Resources
CEC	Committee for Environmental Co-ordination
CEPA	Communication, Education and Public Awareness
CEPF	Critical Ecosystem Partnership Fund
CHM	Clearing House Mechanism
CITES	Convention on International Trade in Endangered Species
CLCC	Chief Land Claims Commissioners
CMA	Catchment Management Agency
CoGTA	Co-operative Governance and Traditional Affairs
CPA	Communal Property Associations
CRDP	Comprehensive Rural Development Programme
CSA	Conservation South Africa
CSIR	Council for Scientific and Industrial Research
DAFF	Department of Agriculture Forestry and Fisheries
DANCED	Danish Cooperation for Environment and Development
DBE	Department of Basic Education
DBSA	Development Bank of Southern Africa
DEA	Department of Environmental Affairs
DEAT	Department of Environmental Affairs and Tourism (now DEA)
DEC	Delta Environment Centre
DED	Department of Economic Development

DENC	Department of Environment and Nature Conservation
DESTEA	Department of Economic, Small Business Development, Tourism and Environmental Affairs
DHET	Department of Higher Education and Training
DIRCO	Department of International Relations and Cooperation
DMR	Department of Minerals and Resources
DoE	Department of Energy
DOJ&CD	Department of Justice and Constitutional Development
DOT	Department of Transport
DPME	Department of Performance Monitoring and Evaluation
DPSA	Department of Public Service and Administration
DRDLR	Department of Rural Development and Land Reform
DST	Department of Science & Technology
DTI	Department of Trade and Industry
DWS	Department of Water and Sanitation
EbA	Ecosystem-based adaptation
EIA	Environmental Impact Assessment
EMF	Environmental Management Framework
EMI	Environmental Management Inspectors
EMI	Environmental Management Inspectorate
EMP	Environmental Management Plans
EPCPD	Environmental Planning and Climate Protection Department
EPWP	Expanded Public Works Programme
EWSETA	Energy and Water Sector Education and Training Authority
EWT	Endangered Wildlife Trust
FBIP	Foundational Biodiversity Information Programme
GDP	Gross Domestic Product
GEF	Global Environment Facility
GIS	Geographical Information System
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit
HCD	Human Capital Development
HCDS	Human Capital Development Strategy
HEI	Higher Education Institutions
HSRC	Human Sciences Research Council
IDP	Integrated Development Plan
IPBES	Intergovernmental Platform on Biodiversity and Ecosystem Services
IPIC	Interdepartmental Project Implementation Committee
IUCN	International Union for Conservation of Nature
LRBSI	Land Reform and Biodiversity Stewardship Initiative
LUS	Land-Use Schemes
MEC	Members of Executive Councils
MINMEC	Minister and Members of Executive Councils Committees
MINTEC	Ministerial Technical Committees
MPAH	Maputaland-Pondoland-Albany Hotspot
MPRDA	Minerals and Petroleum Resources Development Act
MTSF	Medium-term Strategic Framework

NACSA	National Association of Conservancies of South Africa
NAP	National Action Plan
NBA	National Biodiversity Assessment
NBBN	National Biodiversity and Business Network
NBES	National Biodiversity Economy Strategy
NBF	National Biodiversity Framework
NBSAP	National Biodiversity Strategy and Action Plan
NDF	Non-detrimental finding
NDP	National Development Plan
NDT	National Department of Tourism
NEAF	National Environmental Advisory Forum
NEMA	National Environmental Management Act
NESPF	National Environmental Skills Planning Forum
NIE	National Implementing Entity
NORAD	Norwegian Agency for Development Cooperation
NPAES	National Protected Area Expansion Strategy
NPO	Non-profit organisation
NRF	National Research Foundation
NRM	Natural Resource Management
NSBA	National Biodiversity Spatial Assessment
NSSDAP	National Strategy for Sustainable Development and Action Plan
OFO	Organising Framework for Occupations
PDALFA	Preservation and Development of Agricultural Land Framework
PICC	Presidential Infrastructure Coordinating Commission
PPF	Peace Parks Foundation
RDI	Research, Development and Innovation
RESILIM	Resilience in Limpopor Basin Program
RMDEC	Regional Mining Development and Environmental Committee
SADC	South African Development Community
SAEON	South African Environmental Observation Network
SAHRC	South African Human Rights Commission
SALGA	South African Local Government Association
SAMBR	South African Association for Marine Biological Research
SAMSA	South African Maritime Safety Authority
SANBI	South African National Biodiversity Institute
SANCCOB	Southern African Foundation for the Conservation of Coastal Birds
SANDF	South African National Defence Force
SANParks	South African National Parks
SAPS	South African Police Service
SARS	South African Revenue Services
SAWC	South African Wildlife College
SAWS	South African Weather Service
SDF	Spatial Development Framework
SDG	Sustainable Development Goals
SEA	Strategic Environmental Assessment
SIPS	Strategic Integrated Project

SO	Strategic objective
SPLUMA	Spatial Planning and Land Use Management Act
SSA	State Security Agency
StatsSA	Statistics South Africa
TEI	Teacher Education Institute
TOPS	Threatened or Protected Species
UCCP	Umzimvubu Catchment Partnership Programme
UCT	University of Cape Town
UEIP	Umgeni Ecological Infrastructure Programme
UN	United Nations
UNDP	United Nations Development Programme
UNESCO	United Nations Educational, Scientific and Cultural Organisation
USAID	United States Agency for International Development
WESSA	Wildlife and Environment Society of South Africa
WF	Wilderness Foundation
WG	Working group
WRC	Water Research Council
WUA	Water User Association
WWF-SA	World Wide Fund for Nature South Africa

Executive Summary

South Africa "needs to protect the natural environment in all respects, leaving subsequent generations with at least an endowment of at least equal value"

Executive Summary of the National Development Plan 2030 (p 37)

The National Biodiversity Strategy and Action Plan (NBSAP) is a requirement of contracting parties to the Convention on Biological Diversity (CBD). NBSAPs set out a strategy and plan for contracting parties to fulfil the objectives of the Convention. With the adoption of the CBD's Strategic Plan for Biodiversity for 2011-2020, parties agreed to revise and align their NBSAPs to the Strategic Plan and the Aichi Targets.

This document is South Africa's revised NBSAP for the period 2015 – 2025. It identifies the priorities for biodiversity management in South Africa for this period, aligning these with the priorities and targets in the global agenda, as well as national development imperatives.

South Africa is a country with a rich endowment of natural resources, which include its biodiversity and ecosystems. The diversity of these ecosystems delivers a range of services that are essential to people and the development and growth of the economy. The NBSAP outlines a path to ensure the management of biodiversity assets and ecological infrastructure continue to support South Africa's development path and play an important role in underpinning the economy.

Vision of the NBSAP:

Conserve, manage and sustainably use biodiversity to ensure equitable benefits to the people of South Africa, now and in the future.

Strategic objectives:

1. Management of biodiversity assets and their contribution to the economy, rural development, job creation and social wellbeing is enhanced.
2. Investments in ecological infrastructure enhance resilience and ensure benefits to society
3. Biodiversity considerations are mainstreamed into policies, strategies and practices of a range of sectors.
4. People are mobilized to adopt practices that sustain the long-term benefits of biodiversity.
5. Conservation and management of biodiversity is improved through the development of an equitable and suitably skilled workforce.
6. Effective knowledge foundations, including indigenous knowledge and citizen science, support the management, conservation and sustainable use of biodiversity.

Figure 1. Vision and strategic objectives of the NBSAP

The vision of the NBSAP articulates the long-term goal for the state of biodiversity in the country. Six strategic objectives[1] reflect the most pressing issues that the NBSAP seeks to

[1] The 'strategic objectives' in South Africa's NBSAP are sometimes called 'strategic goals' in other NBSAPs. They represent the most pressing issues to address to achieve the vision for biodiversity

address in support of the vision. Each strategic objective is broken down into a comprehensive set of outcomes, which are the priorities for the strategic objective. Each outcome is then addressed through a number of activities. The strategic objectives and outcomes are summarized in Table 1 in the Executive Summary, and discussed in more detail in National Action Plan (main report).

Indicators and targets have been identified at the outcome level. As far as possible, the indicators and targets have been drawn from existing national or organizational strategic plans in South Africa. This has served two functions. While serving as a means to track progress towards implementing the NBSAP, the indicators and targets also enable alignment between the NBSAP and South Africa's development imperatives. This has ensured that the NBSAP is firmly integrated and aligned with the strategic priorities and plans of major role players in South Africa and therefore represents a common vision and plan for biodiversity management.

Sustainability in this context implies ecological sustainability. It recognises that the maintenance of healthy ecosystems and natural resources are preconditions for human wellbeing. It also recognises that there are limits to the goods and services that can be provided. In other words, ecological sustainability acknowledges that human beings are part of nature and not a separate entity.

Sustainable development is the process that is followed to achieve the goal of sustainability. Sustainable development implies the selection and implementation of a development option, which allows for appropriate and justifiable social and economic goals to be achieved, based on the meeting of basic needs and equity, without compromising the natural system on which it is based.

Source: National Strategy for Sustainable Development (2011-2014)

Figure 2. Sustainability and sustainable development

The preparation, coordination and monitoring of the NBSAP is led by the Department of Environmental Affairs. The implementation of the NBSAP will be coordinated and monitored through the existing intergovernmental and sectoral coordination structures. In addition, DEA will convene an annual forum with all role players to review progress towards the implementation of the NBSAP.

Costing South Africa's NBSAP and the development of a resource mobilization plan will be pursued through the Biodiversity Finance Initiative (BIOFIN). BIOFIN is a global initiative funded by the European Union and managed by the United Nations Development Programme (UNDP). BIOFIN is working in pilot countries, including South Africa, to develop a comprehensive national resource mobilizing strategy, improve cost effectiveness through the mainstreaming of biodiversity into national development and sectoral planning, and develop a methodology for quantifying the biodiversity finance gap at national level.

management in the country.

Table 1 Core strategy of the NBSAP

Vision: Conserve, manage and sustainably use biodiversity to ensure equitable benefits to the people of South Africa, now and in the future.						
Strategic objectives	Management of **biodiversity assets** and their contribution to the economy, rural development, job creation and social wellbeing is enhanced.	Investments in **ecological infrastructure** enhance resilience and ensure benefits to society	Biodiversity considerations are **mainstreamed** into policies, strategies and practices of a range of sectors.	People are mobilised to **adopt practices** that sustain the long-term benefits of biodiversity.	Conservation and management of biodiversity is improved through the development of an **equitable and suitably skilled workforce**.	Effective **knowledge foundations**, including indigenous knowledge and citizen science, support the management, conservation and sustainable use of biodiversity.
Outcomes (number of activities per outcome)	1.1 The network of protected areas and conservation areas includes a representative sample of ecosystems and species, and is coherent and effectively managed 1.2 Species of special concern are sustainably managed 1.3 The biodiversity economy is expanded, strengthened and transformed to be more inclusive of the rural poor 1.4 Biodiversity conservation supports the land reform agenda and socio-economic opportunities for communal land holders	2.1 Restore, maintain and secure important ecological infrastructure in a way that contributes to rural development, long-term job creation and livelihoods 2.2 Ecosystem-based adaptation (EbA) is shown to achieve multiple benefits in the context of sustainable development	3.1 Effective science-based biodiversity tools inform planning and decision-making 3.2 Embed biodiversity considerations into national, provincial and municipal development planning and monitoring 3.3 Strengthen and streamline development authorisations and decision-making 3.4 Compliance with authorisations and permits is monitored and enforced 3.5 Appropriate allocation of resources in key sectors and spheres of government facilitates effective management of biodiversity, especially in biodiversity priority areas 3.6 Biodiversity considerations are integrated into the development and implementation of policy, legislative and other tools	4.1 People's awareness of the value of biodiversity is enhanced through more effective coordination and messaging 4.2 People are mobilised to conserve and sustainably use biodiversity	5.1 Macro-level conditions enabled for skills planning, development and evaluation of the sector as a whole 5.2 An improved skills development system incorporates the needs of the biodiversity sector 5.3 Partnerships are developed and institutions are capacitated to deliver on their mandates towards improved service delivery	6.1 Relevant foundational data sets on species and ecosystems are in place and well coordinated 6.2. The status of species and ecosystems is regularly monitored and assessed. 6.3 Geographic priority areas for the management, conservation and restoration of biodiversity assets and ecological infrastructure are identified based on best available science 6.4 Management-relevant and policy-relevant research and analysis is undertaken through collaboration between scientists and practitioners 6.5 Knowledge base is accessible and presented in a way that informs decision-making
	(21 activities)	(8 activities)	(37 activities)	(7 activities)	(12 activities)	(29 activities)

Introduction

The National Biodiversity Strategy and Action Plan (NBSAP) is a requirement that contracting parties to the Convention on Biological Diversity (CBD) are obligated to fulfil. An NBSAP sets out an integrated, coherent national strategy for the conservation, management and sustainable use of biodiversity and specifically, outlines how contracting parties will fulfil the objectives of the Convention. The NBSAP also provides a framework for the integration of biodiversity considerations into other sectoral plans and strategies, and as such, is an important mainstreaming tool.

With the adoption of a revised and updated Strategic Plan for Biodiversity for 2011-2020, including the Aichi Biodiversity Targets, at the tenth Conference of Parties of the CBD held in Nagoya, Japan, parties agreed to revise and update their national biodiversity strategies and action plans in terms of this overarching framework. This document represents South Africa's revised NBSAP.

In addition to fulfilling requirements under the CBD, South Africa's NBSAP also seeks to integrate South Africa's obligations under the CBD into its national development and sectoral planning frameworks and makes explicit links to the priorities and strategies of a wide range of role players and sectors. The NBSAP is therefore both a vehicle for mainstreaming as well as a mainstreaming tool in itself.

This document outlines:

- How South Africa's NBSAP is situated in relation to the CBD and the biodiversity-related national policy framework.
- The process undertaken in the revision of the NBSAP, including the lessons learnt since the NBSAP 2005 and the stakeholder engagement processes.
- A summarized account of the policy, legislative, and institutional context for biodiversity.
- A summary of the state of South Africa's biodiversity assets and ecological infrastructure and the pressures on biodiversity, drawing on the Fifth National Report to the CBD.
- Against this context, the revised NBSAP is presented, followed by a suit of flagship projects that embody one or a number of activities in the NBSAP, help to make the case for biodiversity, are strategically important for biodiversity and development, and demonstrate how the NBSAP will be implemented.
- The document then sets out the structures for institutional coordination and communication of the NBSAP, as well as its monitoring and evaluation.

Development and revision of South Africa's NBSAP

South Africa's NBSAP 2005

South Africa developed its first NBSAP between 2003 and 2005 in terms of Article 6 of the Convention on Biological Diversity, General Measures for Conservation and Sustainable Use, which calls for the development of national strategies, plans or programmes and the integration of conservation and sustainable use of biological diversity into relevant sectoral or cross-sectoral plans, programmes and policies.

South Africa's first NBSAP included a spatial component, the National Spatial Biodiversity Assessment 2004 (NSBA), which provided the first comprehensive national assessment of the status of biodiversity at the ecosystem level across terrestrial, freshwater, estuarine and marine ecosystems. Through its focus on ecosystems, the NSBA followed a landscape approach to biodiversity conservation and ecosystem resilience. Using systematic biodiversity planning, the NSBA provided biodiversity targets, spatial priorities and indicators that can be fed into a wide range of other environmental reports and plans at national and regional scale. The NSBA has also informed the development of provincial and local spatial biodiversity plans and protected area expansion strategies.

The 2005 NBSAP was taken a step further with the requirement in terms of the Biodiversity Act to publish a National Biodiversity Framework (NBF). The first NBF, gazetted in 2009, provides a framework to coordinate and align efforts of many organisations and individuals involved in biodiversity management and conservation. It focusses attention on the top priority actions and targets for biodiversity management and conservation for the period 2008 – 2013. Together, the NBF and the NBSAP form the medium term and long range strategic plans for biodiversity management in South Africa. Figure 3 illustrates the relationship between the CBD, the NBSAP, the NBF, and the NBA (see Figure 4).

Figure 3. Relationship between the CBD, the NBA, the NBSAP and the NBF (Source: 2009 National Biodiversity Framework)

The National Biodiversity Assessment (NBA) 2011 is the second assessment of the state of South Africa's biodiversity, across terrestrial, freshwater, estuarine and marine environments, placing an emphasis on spatial (mapped) information for both ecosystems and species. It synthesises key aspects of South Africa's biodiversity science, making it available in a useful form to policymakers, decision-makers and practitioners in a range of sectors. The NBA includes two headline indicators that are assessed across all environments: ecosystem threat status and ecosystem protection level.

Completed every five to seven years, the NBA is central to fulfilling SANBI's mandate to monitor and report on the state of biodiversity. It is developed over several years, led by SANBI in partnership with a range of organisations, involving wide participation from stakeholders, scientists and biodiversity management experts throughout the country.

The first national assessment of biodiversity in South African was completed in 2004 and called the *National Spatial Biodiversity Assessment* (NSBA 2004). It dealt only with spatial aspects of biodiversity. The NBA 2011 added non-spatial thematic elements such as the state of species of special concern and invasive alien species. The NBA 2011 also presents new work on geographic areas that contribute to climate change resilience, and provides a summary of spatial biodiversity priority areas that have been identified through systematic biodiversity plans at national, provincial and local scales. Systematic biodiversity planning (particularly with regards to conserving ecological processes that support persistence of biodiversity) and assessments of climate change resilience at a landscape scale both take into account features or areas important to maintaining connectivity in landscapes.

The NBA 2011 highlights South Africa's exceptional endowment of biodiversity assets and ecological infrastructure. Ecological infrastructure are the naturally functioning ecosystems that deliver valuable ecosystem services to people, such as fresh water, climate regulation, soil formation and disaster risk reduction. These areas and other biodiversity assets offer significant opportunities to unlock the value of biodiversity and ecosystems in support of the country's development path. The NBA 2011 and the knowledge gathered in its development makes a substantial contribution to towards this, through a growing knowledge base on the value of ecosystems and how to manage them. For this reason, the NBA 2011 informs the revision and updating of key national biodiversity policies and strategies, including the NBSAP, the National Biodiversity Framework (NBF) and the National Protected Area Expansion Strategy. In addition, information from the NBA can be used to streamline environmental decision-making, strengthen land-use planning, strengthen strategic planning about optimal development futures for South Africa, and identify priorities for management and restoration of ecosystems with related opportunities for ecosystem-based job creation.

Figure 4. Assessment of the state of South Africa's biodiversity - the National Biodiversity Assessment (NBA) 2011[2]

Developing a revised NBSAP

In line with the CBD's Strategic Plan for Biodiversity 2011-2020 and Target 17 of the Aichi Biodiversity Targets, there is a requirement for Parties to the Convention to update and revise their NBSAPs. South Africa initiated the process of revising and updating the 2005 NBSAP in 2013. A project steering committee[3] was established with representatives from the Department of Environmental Affairs, the South African National Biodiversity Institute, South African National Parks, and the Western Cape Provincial Government which is developing a provincial biodiversity strategy and action plan. In 2014 a consulting team was appointed to develop the revised NBSAP.

The revised NBSAP has drawn on two recent reports as key informants:

[2] Extracted from the NBA 2011

[3] A list of project steering committee members is provided in the annexures.

- In its **Fifth National Report to the CBD**, South Africa undertook an analysis of progress against the NBSAP 2005. A short synopsis of this review, including lessons learnt, is included below. The revision of the NBSAP drew on this analysis, noting where work still needs to be done to address certain priorities, recognizing where progress has been made that lays foundations to deepen these areas of work, and identifying priorities that have emerged more recently. The NBSAP 2015 is therefore built on the outcomes of the NBSAP 2005.
- The 2004 NSBA was updated with the release of the **2011 National Biodiversity Assessment (NBA)**. Drawing on the best available science, the NBA provides headline indicators for monitoring and reporting and summarises spatial biodiversity priorities. As with the previous NBSAP, the outcomes of the NBA 2011 have informed the revised NBSAP (see Figure 4).

Drawing on these two assessments, the NBSAP revision commenced with a stocktaking and gap analysis (Gaylard et al. 2014), which highlighted priority areas for the revised NBSAP to address.

An inclusive and participatory stakeholder consultation process was conducted during the NBSAP revision. This included two national workshops, a series of bilateral consultations, focus group sessions and surveys to solicit the biodiversity-related priorities of stakeholders including youth[4] (Figure 5).

As part of the stakeholder consultation for the revision of the NBSAP, a short survey was conducted targetting 800 pioneers participating in the GroenSebenza Jobs Fund Partnership Project. Three questions were posed to this group:

- *What are the top priorities for biodiversity management?*
- *What are key issues that the NBSAP must address for youth?*
- *How do we change the behavior of people outside the biodiversity sector?*

Responses from the survey provided valuable insight into the biodiversity issues that were top priorities for young South Africans involved in the sector.

Figure 5. Survey of youth

The first national workshop in November 2014 reviewed the stocktaking and gap assessment, identified broad priority areas to be addressed in the updated strategy and reviewed the global Aichi Targets in the national context. Following this workshop, a series of bilateral stakeholder consultations and focus group sessions built on the outcomes of the November 2014 workshop and resulted in the development of activities to address priorities. The outcomes of the bilateral consultations were consolidated into a first draft of the core biodiversity strategy and action plan which was circulated in advance of the second national stakeholder consultation workshop in April 2015. This workshop further refined and streamlined the NBSAP into a set of sensible, achievable and aspirational priorities and activities and took steps towards the development of an action plan. The outcome of this process was consolidated into a second draft which was circulated for comment before the final version of the NBSAP was developed.

The revision of the NBSAP has aligned with a project funded by the European Union-and managed by the United Nations Development Programme (UNDP) known as Biodiversity Finance Initiative (BIOFIN). BIOFIN is a global initiative launched during the 11th Conference of the Parties to the Convention on Biological Diversity in October 2012. BIOFION seeks to address the biodiversity finance challenge in a comprehensive manner by defining biodiversity finance needs and gaps through detailed national-level assessments and

[4] A full list of all workshop participants and those involved in bilateral consultations is included in the annexures.

determining and leveraging challenges and opportunities for resource mobilisation. This Initiative is managed by the UNDP in partnership with the European Commission and the Governments of Germany and Switzerland. Currently, 29 countries are participating in BIOFIN, including South Africa.

At a national level, BIOFIN aims to develop a resource mobilisation strategy, improve cost effectiveness through mainstreaming biodiversity into national development and sectoral planning, and quantify the biodiversity finance gap. This equates to costing the implementation of the NBSAP and addressing the finance gap through the implementation of a resource mobilisation plan. In South Africa, BIOFIN is being implemented by the Department of Environmental Affairs in collaboration with the National Treasury.

Lessons learnt from an analysis of implementation of the 2005 NBSAP

The NBSAP 2005 is structured around five Strategic Objectives, each of which has a series of 27 outcomes and 122 activities. In order to assess implementation of the NBSAP 2005 for the Fifth National Report to the CBD, an analysis of progress was undertaken at the activity level[5]. Progress towards implementation for each of the 122 activities was rated in one of four categories:

- Green – fully achieved
- Yellow – substantially achieved
- Orange – achieved to a limited extent
- Red – not achieved

The results are summarised in Figure 6.

Overall, 27% of the activities in the NBSAP 2005 have been fully achieved, another 27% substantially achieved, 37% achieved to a limited extent, and 6% not achieved. Three percent of activities are no longer applicable, for example because they addressed a policy or institutional process that subsequently changed or fell away.

Based on this analysis, the highest proportion of activities achieved and substantially achieved is for Strategic Objective 2 which deals with institutional effectiveness. However, this does not necessarily reflect the areas of greatest progress in implementing the NBSAP in practice, as a number of activities actually undertaken since the NBSAP was finalised in 2005 could not have been foreseen at that stage and were thus not included. A fuller analysis of progress towards the NBSAP needs to consider those activities that contribute towards the strategic objectives but which emerged after the NBSAP was finalized. Many of these activities are captured in the Fifth National Report to the CBD.

[5] This section is drawn directly from the succinct and useful analysis of the implementation of the NBSAP 2005 prepared for South Africa's Fifth National Report to the CBD

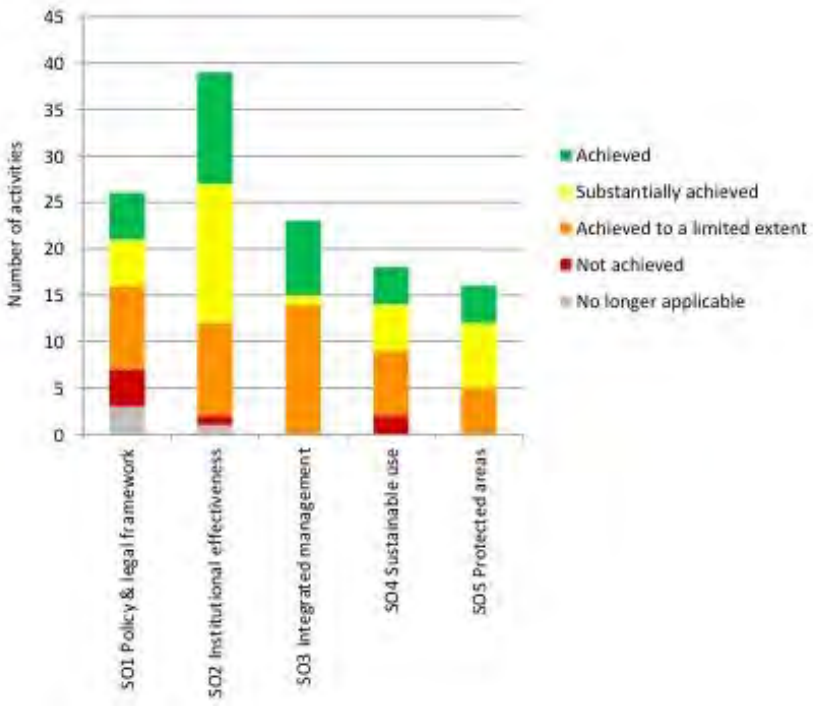

Figure 6: Summary of extent to which 2005 NBSAP activities have been implemented (by strategic objective) (Source: Fifth National Report to the CBD)

A number of lessons emerged from this analysis and have informed the revision of the NBSAP.

Firstly, the need for a bold and transformative agenda must be balanced with what is achievable in the NBSAP timeframe, particularly for mainstreaming activities. Since 2005, South Africa has developed considerable experience in biodiversity mainstreaming. This experience has highlighted that the time required for mainstreaming processes is longer than anticipated as mainstreaming works at effecting systemic change, which is often enduring, but takes longer to achieve.

Secondly, as highlighted by the 3 percent of activities that fell away, being very specific about policy and institutional activities is challenged by the fact that these activities, particularly when mainstreaming, are often opportunistic and usually beyond direct control. Where policy related activities are within a line function and thus more directly controlled, there is still a degree of flux that makes policy processes difficult to control.

A third lesson, taking a broader view, is that the work in the biodiversity sector has evolved and developed substantially in the past 10 years, with a range of strategies being developed to address various aspects of natural resource management and socio-economic development. These include the National Water Resources Strategy, the National Biodiversity Economy Strategy, national and provincial Protected Area Expansion Strategies, the Water RDI Roadmap, the Man and Biosphere Reserve Strategy, the National Biodiversity Research Strategy, amongst others. Not all of these are strategies developed by the environment or biodiversity sectors, but they are important for biodiversity. The revised NBSAP seeks align with these, not replace or repeat them.

These lessons have been core to the revision of the NBSAP. Efforts have been made to ensure that the NBSAP 2015 supports government's transformative agenda while recognising that timeframes and other parameters need to be set according to the nature of different types of activities.

Background[6]

Relevant policy and legislation

South Africa has a strong policy and legislative framework for the conservation, management and sustainable use of biodiversity.

The overall framework for environmental governance in South Africa is established in South Africa's Constitution (Act 108 of 1996) which:

- Protects the "right to an environment that is not harmful to health and well-being";
- Balances the right to have the environment protected with rights to valid social and economic development; and by
- Allocates environmental functions to a wide range of government agencies in all spheres and requiring co-operation between government agencies and spheres of government.

At the time of the NBSAP 2005, South Africa's policy and legislative framework for the conservation, management and sustainable use of biodiversity was already well-developed. Under the National Environmental Management Act (NEMA) (Act 107 of 1998), the NEM: Biodiversity Act (Act 10 of 2004) (hereafter referred to as the Biodiversity Act) still provides the main legislative framework for the management of biodiversity; and the NEM: Protected Areas Act (Act 57 of 2003) (hereafter referred to as the Protected Areas Act) still provides for the protection and conservation of biodiversity.

Significant additions to the framework subsequent to that included the publication of the:

- National Biodiversity Framework (2008), which was published in 2009 in accordance with the Biodiversity Act, with the purpose of coordinating and aligning the efforts of the organisations and individuals involved in conserving and managing South Africa's biodiversity through the identification of 33 priority actions for the period 2008 to 2013.

- The Constitution (Act 108 of 1996)
- White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity (1997)
- White Paper on Environmental Management Policy for South Africa (1998)
- National Environmental Management Act (Act 107 of 1998)
- National Environmental Management: Biodiversity Act (Act 10 of 2004) (hereafter referred to as the Biodiversity Act)
- National Environmental Management: Protected Areas Act (Act 57 of 2003) (hereafter referred to as the Protected Areas Act)
- Marine Living Resources Act (Act 18 of 1998)
- National Forest Act (Act 84 of 1998)
- Provincial biodiversity legislation – this differs from province to province
- National Biodiversity Strategy and Action Plan (2005)
- National Biodiversity Framework (2008)
- National Protected Area Expansion Strategy (2008)
- Provincial biodiversity strategies, and provincial protected area expansion strategies, which have been developed by some provinces

Figure 7. Relevant policy and legislation for biodiversity conservation, management and sustainable use

[6] The background for biodiversity management and conservation has been written about repeatedly. This section therefore draws heavily on relevant resources South Africa's Country Reports to the CBD (RSA 2014, DEAT 2009), NBA (2011), and somewhat from other resources such as DEA (2005), SANBI (2014a, b and c), DEA et al. (2013).

- National Protected Area Expansion Strategy (2008), the goal of which is to achieve cost-effective expansion of the protected area network that enhances ecological sustainability and resilience to climate change through setting ecosystem-specific targets for protected area expansion, identifying geographic focus areas for land-based protected area expansion, and making recommendations about mechanisms for protected area expansion.

The key elements of the policy and legal framework for biodiversity include those listed in Figure 77, a quick glance at which shows that there have not been fundamental changes in biodiversity policy in South Africa since 2009. There have, however, been some changes or improvements to strengthen implementation including:

- Amendments to key elements of the legislative framework, such as to the:
    - Biodiversity Act including amendments, among others to increase the maximum penalties for contraventions in terms of the Biodiversity Act (published in 2009) and to expand the scope of the regulatory provisions relating to alien and listed invasive species, and to enhance the circumstances in which issuing authorities may refuse, cancel or suspend permits in order to limit abuse of the permit system (published in 2013).
    - Protected Areas Act to clarify certain issues and facilitate implementation.
- Publication of new, and amendments to various existing norms and standards, regulations, and guidelines published and implemented in terms of the Biodiversity Act such as to the:
    - Regulations for the Convention on International Trade in Endangered Species (CITES)
    - National Moratorium on Trade of Individual Rhinoceros Horns
    - Amendments to the Norms and Standards for the Marking of Rhinoceros and Rhinoceros Horn, and for the Hunting of Rhinoceros for Trophy Hunting Purposes
    - Prohibition of Trade in Certain *Encephalartos* (Cycad) Species
    - Amendments to the Threatened or Protected Species (TOPS) Regulations and review of the species list (based on the Red List assessment process).
    - List of Threatened Terrestrial Ecosystems
    - Regulations for Alien and Invasive Species
    - Biodiversity Management Plans for Species (BMP-S)
    - Norms and Standards for Biodiversity Management Plans for Ecosystems (BMP-E)
    - Revision of the Regulations for Bio-prospecting, Access and Benefit Sharing (BABS) and the Bioprospecting, Access and Benefit Sharing Regulatory Framework: Guidelines for Providers, Users and Regulators
- Publication in terms of the Integrated Coastal Management Act (Act 24 of 2008):
    - National Coastal Management Programme
- Some provinces have revised or are in the process of revising their biodiversity legislation.

Policy evolution is ongoing and is important for responding to emerging issues, gaps, and clarifying certain issues to facilitate implementation. It is also influenced by international conventions, treaties, protocols and other agreements that South Africa has signed and ratified. These include:

- The three Rio Conventions, which are intrinsically linked, operating in the same ecosystems and addressing interdependent issues:
    - UN Convention on Biological Diversity, ratified in 1995, and the two

Convention Protocols namely,
    - The Cartegena Protocol on Biosafety to the CBD (governing the movement of living modified organisms (LMOs) resulting from biotechnology from one country to another)
    - The Nagoya Protocol on Access to genetic resources and the fair and equitable sharing of benefits arising from their utilisation to the CBD.
  - UN Convention to Combat Desertification, ratified in 1997, South Africa's has subsequently developed a National Action Programme (NAP), a process in which government, local communities and land users consider ways in which to combat desertification.
  - UN Framework Convention on Climate Change, ratified by South Africa in 1997.
- Other biodiversity-related conventions (date of ratification in brackets):
  - International Plant Protection Convention (1952)
  - Convention on Wetlands (popularly known as the Ramsar Convention) (1971)
  - World Heritage Convention (1972)
  - UN Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) (1975)
  - Convention on Migratory Species (CMS) (1975)
  - International Treaty on Plant Genetic Resources for Food and Agriculture (2004)
- Other agreements and treaties:
  - Sustainable Development Goals (SDGs)
  - Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) Agreement on the Conservation of Albatrosses and Petrels (ACAP)
  - UNESCO Man and Biosphere Programme (MAB)
  - Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR)
  - International Whaling Commission
  - Antarctic Treaty
  - SADC Instruments

A significant indication of political will and commitment to biodiversity management and conservation is signalled by Outcome 10 of the Presidential Delivery Agreement, which was adopted by the Cabinet in 2010. The 12 Outcomes in the Presidential Delivery Agreement articulate in more detail the strategic priorities of the Medium Term Strategic Framework (MTSF) and are accompanied by measurable outputs, key activities and Outcome Delivery Performance Agreements between the President and Ministers. The MTSF in turn provides guidance for achieving the National Development Plan (NDP) 2030 priorities.

The MTSF is a framework guiding government's programme of work in a particular electoral period. The current MTSF period is 2014-2019. It provides a prioritised framework for focusing government efforts on strategic priorities for moving South Africa to an environmentally sustainable, climate change resilient, low-carbon economy.

The NDP 2030 offers a long-term perspective on South Africa's priorities, and aims to eliminate poverty and reduce inequality by 2030. It defines a desired destination and identifies the role different sectors of society need to play in reaching that goal.

Figure 8. The MTSF and the NDP

Outcome 10 in the MTSF 2014-2019 is 'Environmental assets and natural resources that are well protected and continually enhanced'. It sets priorities for relevant government departments and conservation agencies and forms the government's delivery and

implementation plan for the period. The plan is reviewed annually and reported on throughout the year, forming a key input in determining national budget allocations. Final budget allocations affect the order of priorities and phasing of the implementation of the delivery agreements.

Institutional context

The institutional environment for biodiversity has been described in the National Country Reports to the CBD, and has not changed substantially in the last ten years.

The three spheres of government in South Africa – national, provincial and local – operate as "distinctive, interdependent and interrelated" spheres of government through co-operative governance, a principle emphasized in the Constitution. National legislative competencies include land reform, water resources, forest resources, marine resources, national parks and national botanical gardens. Functional areas of concurrent national and provincial legislative competence include environmental management, pollution control, soil conservation, nature conservation (excluding national parks, national botanical gardens and marine resources) and regional planning and development. Local government (district and local municipalities) play an important role in development planning and management of biodiversity. As was the case in the NBSAP 2005, the revised NBSAP focuses attention on all levels of government to facilitate implementation of the NBSAP but places emphasis on support to local government to facilitate implementation.

Since the NBSAP 2005, South Africa's public sector institutions, both nationally and provincially, have been restructured several times. The current configuration of government departments with mandates that link to the conservation and management of biodiversity and natural resources is outlined below. While these changes have included the national department responsible for the environment[7], the biodiversity sector in South Africa has remained institutionally strong and well established. It is comprised of:

- The public sector institutions that are mandated with the conservation and management of biodiversity, including:
    - Department of Environmental Affairs (DEA) is South Africa's primary environmental custodian, mandated to protect the environment and conserve natural resources while balancing this with sustainable development and the equitable distribution of natural resource benefits. DEA fulfills its mandate through formulating, coordinating and monitoring the implementation of national environmental policies, programmes and legislation, and through undertaking appropriate research. These include policies, strategies, programmes and frameworks on addressing biodiversity management and conservation, climate change, land degradation, sustainable development and poverty alleviation. In addition, DEA has a series of Environmental Programmes that play an important role in the management of biodiversity and natural resources. These include Working for Wetlands, Working for Water, Working for Land, and Working for Energy, amongst others.
    - South African National Biodiversity Institute (SANBI) was established in terms

[7] In 2005 the national department responsible for the environment included tourism and was known as the Department of Environmental Affairs and Tourism (DEAT). This function has subsequently been split into two departments, namely: the Department of Environmental Affairs (DEA) and the National Department of Tourism (NDT).

of the Biodiversity Act and is a public entity, falling under the Minister of Environmental Affairs, with the purpose of assisting in achieving the objectives of the Biodiversity Act. Its mandate includes playing a leading role in South Africa's national commitment to biodiversity management particularly in relation to the biodiversity research agenda, provision of knowledge and information, policy support and advice, monitoring and reporting on the state of biodiversity, and managing botanical gardens.

  - South African National Parks (SANParks), which was established in terms of the Protected Areas Act as a conservation authority mandated to conserve, protect, control and manage a system of national parks and other defined protected areas and their biodiversity.
  - South African Weather Service (SAWS), which was established as a public entity in 2001 in terms of the South African Weather Service Act (No. 8 of 2001), to be the custodian of reliable national meteorological and climatological data, which is important to biodiversity management and conservation.
  - iSimangaliso Wetland Park Authority, which is an authority pursuant to section 9 of the World Heritage Convention Act (No. 49 of 1999) was set up to manage the iSimangaliso Wetland Park, a UNESCO World Heritage Site listed for its outstanding natural values in 1999.
  - Provincial departments of environmental affairs and provincial conservation authorities exist for each of South Africa's nine provinces. The separation of agency and the mandate of provincial conservation authorities varies across provinces. In some cases the provincial conservation authority forms part of the provincial department of environmental affairs; in other cases it is a separate agency. In some cases the provincial conservation authority has a mandate to work throughout the province concerned, both inside and outside protected areas, while in other cases it has a mandate to work only within protected areas (including the development and promotion of ecotourism facilities within protected areas).

- Other organs of state have a direct role in managing natural resources, and impact on biodiversity, including:
  - Department of Water and Sanitation (DWS), which shares the mandate for managing freshwater ecosystems with DEA. It is primarily responsible for the formulation and implementation of policy governing the water sector, such as the National Water Resource Strategy (NWRS), and it has overriding responsibility for water services provided by local government (see DWA, 2013a). Revisions to the NWRS have strengthened recognition of healthy freshwater ecosystems as important for water security. Its implementation in general, but the chapter 5 on water resource protection in particular, is relevant to the management of biodiversity assets and ecological infrastructure. Revisions to the draft Water Pricing Strategy also recognise the importance of healthy freshwater ecosystems to water security through the inclusion of the use of revenue gained from water tariffs to support investment into ecological infrastructure for water security.
  - Department of Agriculture, Forestry and Fisheries (DAFF), which draws its legislative mandate from section 27(1)(b) of the Constitution of South Africa. It is primarily responsible for Acts related to the agriculture, forestry and fisheries value chains from inputs, production and value adding to retailing (see DAFF, 2013), much of which impacts on biodiversity management in various ways. Mainstreaming biodiversity into agriculture, forestry and

fishery policies, plans and practices is therefore a priority and often takes place in ways that directly involves private sector partners, sector bodies, NGOs and provincial departments. DAFF has a large, cross-sectoral LandCare programme that through partnerships and cooperation seeks to conserve and sustainably use or develop natural resources while creating jobs and addressing poverty alleviation. The interdependencies between the agricultural and biodiversity sectors provide important opportunities for mainstreaming biodiversity considerations into agricultural planning, capacity building and empowerment through the implementation of the LandCare programme and agricultural legislation and policy, including amongst others, the Conservation of Agricultural Resources Act (Act 43 of 1983) and the draft Policy and Bill on Preservation and Development of Agricultural Land Framework (PD-ALFA). Provincial departments of agriculture in some cases include a mandate for land affairs or rural development.

- Department of Rural Development and Land Reform (DRDLR), which draws its legislative mandate from the Constitution, specifically Section 25 (which establishes the framework for the implementation of land reform), and Section 24 and 27 (which establishes the framework for the implementation of the Comprehensive Rural Development Programme (CRDP). The Integrated Sustainable Rural Development programme is a large, cross-sectoral programme focusing on development and poverty alleviation. It presents an important opportunity to mainstream biodiversity considerations into development planning, capacity building and community empowerment. The Spatial Planning and Land Use Management Act (SPLUMA) (Act 16 of 2013) provides the framework for spatial planning and land use management and as such, holds opportunities for integrating biodiversity into development planning.
- Department of Mineral Resources (DMR), which draws its legislative mandate from the Mineral and Petroleum Resources Development Act (Act 28 of 2002) which provides the regulatory framework for equitable access to and sustainable development of the nation's mineral resources. Mainstreaming biodiversity considerations into the mining sector is of ongoing importance to mitigate the impacts of mining on biodiversity. DEA's engagement with DMR and other role players in the mining sector culminated in a "Mining and Biodiversity Guideline: Mainstreaming Biodiversity into the Mining Sector" in 2013 (DEA et al., 2013). The guideline provides a user-friendly manual for integrating biodiversity considerations into the planning processes and managing biodiversity during the life cycle of a mining project, presenting this from the perspective of risk to biodiversity priority areas and to mining projects.
- Local government (municipalities), which has jurisdiction over significant natural resources in urban and rural areas. A key function of municipalities includes the development of Integrated Development Plans (IDPs) and their spatial component, Spatial Development Frameworks (SDFs). Since the NBSAP 2005, much work has gone into developing tools for integrating biodiversity considerations into local level planning through IDPs and SDFs. Bioregional Plans provided for under the Biodiversity Act, or Biodiversity Sector Plans, are key tools for municipalities and represent the biodiversity sector's input into the planning and development of other sectors, including local government.

- Intergovernmental structures are important to supporting cooperative governance

between different organs of state. Those relevant to biodiversity include:

- Minister and Members of Executive Councils (MEC) Committees (known as MINMEC), which is a forum that meets quarterly to promote co-operative governance between the national ministers and their respective counterparts at provincial level. The environmental MINMEC comprises the Minister of Environmental Affairs, the Director-General of DEA and the provincial MECs for Environmental Affairs (as mandated by Intergovernmental Relations Framework Act (Act 13 of 2005)).
- Ministerial Technical Committees (MINTECH), which is a forum that meets quarterly to facilitate coordination between DEA and the provincial environmental departments. It comprises the Director-General of DEA, representatives of public entities including SANBI and SANParks, and the heads of the provincial departments responsible for environmental management and biodiversity conservation (as mandated by Intergovernmental Relations Framework Act of 2005).
- A series of MINTECH Working Groups (WG), which bring together senior officials in national and provincial government, including working groups that deal with Biodiversity and Conservation, Air Quality, Environmental Sector Coordination and Information Management, Compliance and Enforcement, Integrated Environmental Management/Authorisation, Job Creation and EPWP, Oceans and Coasts, Waste and Chemical Management, Climate Change, Law Reform and Policy Development, and Communications.
- Interdepartmental Committee on Inland Water Ecosystems, which was established in 2011 and brings together all organs of state relevant to the management of freshwater ecosystems, including DEA, DWA, SANBI and SANParks. This committee is a new development since the NBSAP 2005, and is working well to increase the focus of government on freshwater ecosystems and to clarify roles and responsibilities in relation to their management.
- Interdepartmental Project Implementation Committee (IPIC), which was established with representation of DEA, DWA and the Department of Mineral Resources (DMR), with the aim of ensuring aligned implementation of the three Acts from which these departments draw their mandates, i.e. the National Environmental Management Act of 1998, the National Water Act of 1998 and the Mineral and Petroleum Resources Development Act of 2002.
- Regional Mining Development and Environmental Committee (RMDEC), which was established in terms of the Minerals and Petroleum Resources Development Act, 2002 (Act 28 of 2002) (MPRDA) in all the regions. The Committee consists of members drawn from relevant Government Departments or organs of State from National, Provincial and Local level. The functions of the RMDEC includes advising the Minister on objections received to the granting of a prospecting right, mining right or mining permit, and considering objections regarding the environmental management programmes or environmental management plans, reconnaissance permissions, prospecting rights or mining permits and making recommendations thereon to the Minister.
- Other cross-sector collaborations between various institutions catalysed as a result of the Presidential Delivery Agreement (mentioned above).

- A number of public research organisations, many of which are established under specific legislation, play a central role in supporting and funding research on issues related to biodiversity conservation and management in South Africa. The National

Research Foundation (NRF), established under the National Research Foundation Act (Act No 23 of 1998), has a number of business units that work directly on biodiversity, including the South African Institute for Aquatic Biodiversity (SAIAB), the South African Environmental Observation Network (SAEON), and the National Zoological Gardens of South Africa (NZG). The Human Sciences Research Council (HSRC) is established under the HSRC Act (No. 17 of 2008) to promote large-scale, policy-relevant, social-scientific research "in the field of human sciences in order to improve understanding of social conditions and the process of social change". The Water Research Council (WRC) is established under the Water Research Act (Act 34 of 1971) to promote co-ordination, co-operation and communication in the area of water research and development and receives its funding from water pricing. The Council for Scientific and Industrial Research (CSIR) and the Agricultural Research Council (ARC) are similarly established by Acts of Parliament as science councils and are partly funded through Parliamentary grants. Both organisations have large biodiversity-related programmes of work.

- Non-Governmental Organisation (NGOs) play an important role in the biodiversity sector in South Africa, including through accessing corporate funding which would not be possible for government to access. NGOs are able to innovate and be flexible, and often work in partnership with the public sector. Some of the biodiversity-related NGOs active in South Africa include: African Conservation Trust (ACT), Birdlife South Africa, Botanical Society of South Africa (BotSoc), Conservation South Africa (CSA), affiliated with Conservation International, Delta Environment Centre (DEC), the Endangered Wildlife Trust (EWT), IUCN (International Union for Conservation of Nature) South Africa, Lewis Foundation, National Association of Conservancies of South Africa (NACSA), Peace Parks Foundation (PPF), Resource Africa South Africa , Southern African Foundation for the Conservation of Coastal Birds (SANCCOB), South African Association for Marine Biological Research (SAMBR), Southern African Wildlife College (SAWC), the Wilderness Foundation (WF), the Wildlands Conservation Trust, Wildlife and Environment Society of South Africa (WESSA), and the World Wide Fund for Nature South Africa (WWF-SA).
- Public-private partnerships and cooperative efforts relevant to biodiversity and ecosystem management, of which, since the NBSAP 2005, there is a growing number involving the state, private companies, non-governmental organisations (NGOs), and the public. These multi-stakeholder cooperative efforts recognize that managing biodiversity, particularly at an ecosystem level, requires interventions involving a range of role players in different landscapes working together and sharing the responsibility for biodiversity management. The growing number of examples indicates an increasing appreciation of the relevance of biodiversity and the services delivered from healthy, functioning ecosystems to governments, private companies, non-governmental organisations (NGOs), and the general public. Examples include the National Biodiversity and Business Network (NBBN), some cases in the Business-Adopt-A-Municipality programme, and the South African Sustainable Seafood Index among many others. Environmental NGOs regularly play an important driving or facilitating role in such partnerships.

Biodiversity-related expenditure

A recent figure from National Treasury on government expenditure on environment from

2013/2014 was around R9.9 billion[8].

Environmentally relevant public expenditures are expenditures by public institutions for purposeful activities aimed at the prevention, reduction and elimination of pollution or any other degradation of the environment resulting from human activity, as well as natural resource management activities not aimed at resource exploitation or production. This includes allocations to national departments of environmental affairs, water and sanitation, agriculture, forestry and fisheries, cooperative governance, energy, health, and science and technology. Certain public entities receive, in addition to the direct allocations or transfers from national departments, transfers from other government departments, own revenues and other sources, which contributes billions of Rand to expenditure on environment. For instance, for entities such as SANBI, SANParks and iSimangaliso Wetland Park, these additional transfers amount to over R1.9 billion that is additional to the R0.5 billion allocated from the line department.

In addition to public sector finance, the biodiversity sector has received substantial investment through various donors and donor-funded projects, programmes or funds, such as from the:

- Global Environment Facility (GEF) that funded the Cape Action for People and the Environment project, the Agulhas Biodiversity Initiative (ABI), the Wild Coast project, and the Grasslands Programme (all of which successfully leveraged additional funds from other sources).
- The Critical Ecosystem Partnership Fund (CEPF) that invested in the Maputaland-Pondoland-Albany Hotspot (MPAH), the Succulent Karoo and the Cape Floristic Region.
- The United States Agency for International Development (USAID) that funded the Resilience in Limpopo Basin Program (RESILIM).
- The Green Fund and Drylands Fund that receive national government as well as international funds.

Additional funders include the Danish Cooperation for Environment and Development (DANCED), Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), Norwegian Agency for Development Cooperation (NORAD), World-Wide Fund for Nature (WWF), International Union for Conservation of Nature (IUCN), Fauna and Flora International, and the International Fund for Animal Welfare.

Further, private sector funds for biodiversity management and conservation are also harnessed through public-private partnerships and NGOs. In many cases biodiversity management and conservation is funded through layering of multiple funding sources.

Relationship to key development policies, strategies and plans, or government-led programmes

A number of key development polices, strategies and plans express the possibilities biodiversity presents to the development agenda. These provide opportunities for mainstreaming biodiversity concerns into the national agenda. Two key documents are the NDP and the National Strategy for Sustainable Development and Action Plan (NSSDAP).

The NDP is a key over-arching plan that guides South Africa's development path until 2030.

[8] This is a high level estimate of the allocations to National Departments and a snapshot of expenditure allocations for 2013/2014.

The NDP naturally places a strong emphasis on economic growth and development, with the implication that environmental planning needs to be robust enough to secure biodiversity from decisions driven largely by a development agenda. It recognises that some of our development objectives are in conflict with each other, but affirms that South Africa "***needs to protect the natural environment in all respects, leaving subsequent generations with at least an endowment of at least equal value***"[9]. The NDP therefore deals extensively with natural resources and biodiversity across topics and content focused on tourism, agriculture and rural development, economic infrastructure (water), and human settlements (spatial planning).

The NDP is partly being implemented through the National Infrastructure Plan (PICC, 2012), which includes an initial set of 18 Strategic Integrated Projects (SIPS) and the enabling Infrastructure Development Act (Act 23 of 2014). A possible 19th SIP, which is in the process of being finalized and put forward for Cabinet endorsement, highlights the role of biodiversity and ecosystems in the delivery of services through infrastructure by focusing investment on ecological infrastructure to enhance water security.

The NSSDAP, endorsed by Cabinet in 2011, includes five strategic priorities that feature in the NDP, and comprehensively covers content on biodiversity and ecological sustainability, amongst other topics. Three of the strategic priorities reflect the need for sustaining healthy ecosystems, sustainable utilisation of natural resources and the role of ecosystems in climate change adaptation.

The New Growth Path was adopted in 2011 as a framework for economic policy and job creation in South Africa. It sets out a series of strategies to build an economy capable of sustained growth able to offer the jobs needed to address unemployment. The green economy is recognised in the New Growth Path as one of the new economies able to contribute towards this vision, with the potential to create an additional 300 000 jobs by 2020, and over 400 000 by 2030. Many of these jobs will come through the management of biodiversity and ecological infrastructure. The Green Economy Accord outlines in more detail government's commitments to the green economy.

A recent initiative designed to address critical development issues highlighted in the NDP 2030 is Operation Phakisa. Operation Phakisa is focused on implementing priority programmes that will unlock the South Africa's economic potential in a way that helps to address poverty and unemployment. Operation Phakisa is initially implemented in two sectors, the ocean economy and health, and will be rolled out in other sectors. In the oceans economy four priority areas for unlocking the oceans economy through inclusive economic growth have been identified, one of which is marine protection services and ocean governance.

Other biodiversity and sustainable development relevant government policies and plans include:

- National Biodiversity Economy Strategy (NBES), being developed by DEA.
- South African National Man and Biosphere Strategy (currently under development), coordinated by the South African Man and Biosphere National Committee, of which DEA is the focal point.
- World Heritage Convention Act (49 of 1999) and appropriate reviews of management performance for World Heritage Sites undertaken by UNESCO (e.g. 2014).
- Spatial Planning and Land Use Management Act (Act 16 of 2013).
- Policy on approval for siting, management and supply of resources (e.g. coal) to power producing facilities, held across the Departments of Energy, and Mineral

[9] Executive Summary of the National Development Plan 2030 (p 37)

Resources.

- Municipal Finance Act and municipal finance support (such as the Cities Support Programme), and finance and planning policy reform initiatives.
- A "Discussion Document towards an Anti-Poverty Strategy for South Africa" which takes cognisance of the important role that healthy ecosystems play in sustainable development.
- National Framework for Sustainable Development, which recognises the important role that healthy ecosystems play in sustainable development.
- The National Climate Change Response Strategy and National Action Programme for Combating Land Degradation which both incorporate biodiversity related matters.

A number of large, cross-sectoral government-led programmes have been initiated in South Africa during the past decade, which focus on sustainable development, job creation and poverty alleviation. Examples include the Working for Water, Working for Wetlands, LandCare and Integrated Sustainable Rural Development programmes. These present important opportunities to mainstream biodiversity considerations into development planning, capacity building and community empowerment. They also highlight the tremendous potential that investing in biodiversity and ecological infrastructure holds for job creation and service delivery in South Africa's economy.

South Africa's biodiversity

South Africa ranks as the third most biologically diverse country in the world, and contains three of the world's 34 biodiversity hotspots – the Maputaland-Pondoland-Albany Hotspot, the Cape Floristic Region and the Succulent Karoo.

South Africa is recognised for its species diversity and endemism as well as its diversity of ecosystems. These diverse ecosystems deliver ecosystem services that are of benefit to people including the provision of basic services and goods such as clean air, water, food, medicine and fibre; as well as more complex services that regulate and mitigate our climate, protect us from natural disaster and provide us with a rich heritage of nature-based cultural traditions. Naturally functioning ecosystems that deliver these valuable services to people are known as *ecological infrastructure*. These rich endowments of biodiversity assets and ecological infrastructure provide immense opportunity to support South Africa's development path and play an important role in underpinning the economy.

Understanding our biodiversity, how it supports development and human well-being and how it is impacted by development activities is important in unlocking the value of biodiversity and ecosystems in support of the country's development path. While biodiversity is essentially everywhere, some areas are more important than others in terms of the biodiversity that occurs there. South Africa has a relatively long history of assessing aspects of biodiversity and ecosystems through good spatial and non-spatial biodiversity information and experienced systematic biodiversity assessment and planning specialists. This has resulted in a knowledge base on biodiversity that continues to grow, the identification of priority areas for biodiversity management and conservation (often referred to as biodiversity priority areas), and assessments of the status and trends of biodiversity.

The first assessment of South Africa's biodiversity across terrestrial, river, estuarine and marine environments was done in 2004. With assessments done every 5 to 7 years, the 2011 assessment included advances in mapping and classifying ecosystems, such as the inclusion of wetland ecosystems and areas important for climate change resilience, advances in inclusion of species of special concern and invasive alien species, amongst other things. The National Biodiversity Assessment is led by SANBI in partnership with a wide range of organisations,

involving participation from stakeholders, scientists and biodiversity management experts. It is critical to informing the revision and updating of key national biodiversity policies and strategies, including the NBSAP, NBF and National Protected Area Expansion Strategy (NPAES). The NBA and its underlying information is used to streamline environmental decision-making, strengthen land-use planning, strengthen strategic planning about optimal development futures for South Africa, and identify priorities for management and restoration of ecosystems with related opportunities for ecosystem-based job creation. Since the NBSAP 2005, biodiversity information has been deeply integrated into development planning systems and processes.

South Africa's biodiversity is assessed across terrestrial, river, wetland, estuarine, coastal and marine ecosystems, using two national ecosystem indicators, namely *ecosystem threat status* and *ecosystem protection level*. The ecosystem threat status in the NBA 2011 highlighted that wetland ecosystems are the most threatened ecosystems in South Africa (see Figure 99) and the ecosystem protection level highlights that wetland and offshore ecosystems have the highest proportion of ecosystem types that are not protected (see Figure 10).

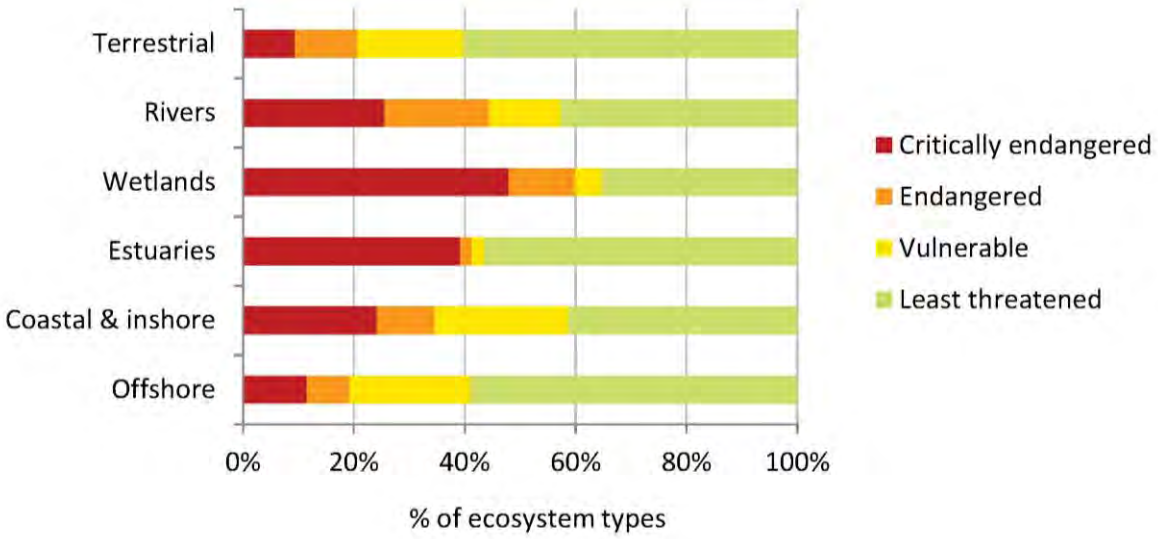

Figure 9. Summary of ecosystem threat status across terrestrial and aquatic ecosystems (NBA 2011)

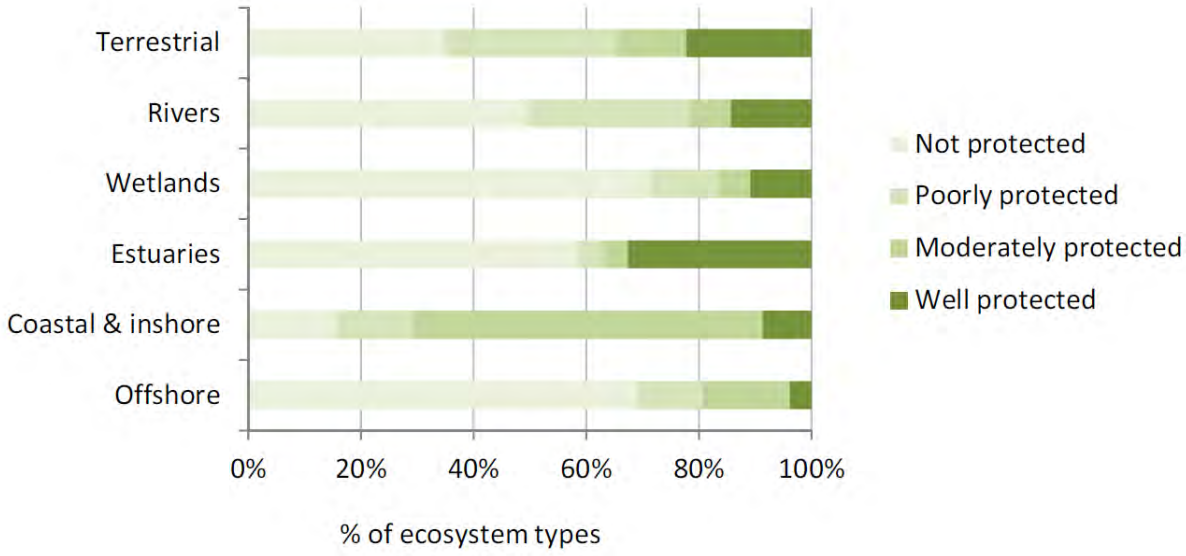

Figure 10. Summary of ecosystem protection level across terrestrial and aquatic ecosystems (NBA 2011)

Both of these indicators has direct links to policy. Examples include the listing of threatened ecosystems in terms of the Biodiversity Act, and the identification of ecosystems in need of protection, which informs the expansion of South Africa's protected area network and priority areas for conservation action. The biodiversity stewardship approach is an increasingly favoured mechanism being used for the expansion of the protected area network and the conservation estate (see Figure 111).

Biodiversity stewardship is an approach to protect and manage land in biodiversity priority areas that is led by conservation authorities entering into legal agreements with private and communal landowners. It recognises landowners as the custodians of biodiversity on their land and is based on voluntary commitments from landowners, with a range of different types of biodiversity stewardship agreements some involving formally declared as protected areas in terms of the Protected Areas Act, others secured in terms of the Biodiversity Act or contract law. It has proven to be a cost-effective mechanism for expanding the protected area network and making a significant contribution to meeting national protected area targets. In biodiversity stewardship areas that do not involve a formal declaration in terms of the Protected Areas Act, such as those where a Biodiversity Management Agreement governed by the Biodiversity Act or a Biodiversity Agreement bound by a contract exist, the development of biodiversity management plans is contributing to better management of biodiversity outside of protected areas.

Figure 11. Biodiversity Stewardship in South Africa

A growing knowledge base, built on ongoing research and monitoring, is highlighting certain ecosystems as high-value ecological infrastructure that provide critical ecosystem services. These include wetlands that provide water purification and flood regulation, strategic water source areas that are of strategic importance for water security, healthy river tributaries that help to improve and maintain water quality and quantity, estuaries that provide important nursery areas for marine fish and invertebrates including commercially harvested ones, and coastal and inshore marine ecosystems that help to buffer the impacts of climate change. An emerging focus on this ecological infrastructure is helping to unlock investment in South Africa's ecosystems, with multiple social, environmental and economic benefits.

South Africa has over 95 000 known species. Species of plants, animals, birds, fish, frogs, reptiles, molluscs, insects and fungi are the building blocks of ecosystems. Some of these species are referred to as species of special concern, having particular ecological, economic or cultural significance. Examples include medicinal plants, harvested marine species or

threatened species. Conservation assessments of species, or Red Lists, use an internationally agreed set of criteria to assess the threat levels of different species, based on the likelihood of extinction. South Africa has a dedicated Threatened Species Programme and is a world leader in Red Listing, having assessed a wider range of taxonomic groups than most countries, and being the only mega-diverse country to have assessed its entire flora. Results from Red List assessments show that the proportion of threatened species is highest for freshwater fish and inland mammals but the highest number of threatened species is found in the plant group. Knowledge gaps with respect to the conservation status of species in South Africa exist for marine and invertebrate species. These assessments link to policy such as the regulations for Threatened or Protected Species (TOPS) and the Convention on International Trade in Endangered Species (CITES) published in terms of the Biodiversity Act.

Pressures on biodiversity

Analyses based on assessments of the status and trends of species and ecosystems highlight key pressures on South Africa's biodiversity that are as a result of multiple interacting drivers of change.

Rates of loss and degradation of natural habitat, in terrestrial, freshwater and marine environments is high in some parts of the country (such as in Gauteng, Kwa-Zulu Natal and North West Province) and is the primary threat to species. For species the issue is not simply the loss of individual patches of natural vegetation but also the resulting fragmentation of the remaining natural vegetation, which is a problem especially for species that need large areas of natural habitat to survive and those that cannot move easily between remaining patches of habitat. Fragmentation also prevents landscape-scale ecological processes, such as fire, from functioning effectively.

The drivers of loss and degradation of natural habitat vary across these areas, but the major drivers at a national level include conversion to cultivation and over-grazing in terrestrial and wetland ecosystems, invasive alien species in terrestrial and freshwater ecosystems, coastal development in coastal ecosystems, certain fishing activities, such as trawling, in marine ecosystems, and mining in all ecosystems. Maps of biodiversity priority areas are especially important for guiding land and marine use decisions about where to locate development, especially in these areas.

Alterations to the timing and quantity of river flows, for example as a result of dams, transfer schemes between catchments, or poor catchment management, are major pressures faced by rivers and wetland ecosystems. Pollutants and sediments from surrounding landscapes is a serious and growing problem to aquatic ecosystems, river and wetland ecosystems in particular. Other pressures on wetland ecosystems include cultivation, urban development, mining, and poor grazing management. Over-utilisation of biodiversity assets, especially in the marine environment, invasive alien species in terrestrial, freshwater and marine ecosystems, and climate change pose additional impacts on biodiversity.

The underlying drivers of these pressures are related chiefly to patterns of consumption and production, often for the benefit of the relatively wealthy. Unfortunately it is frequently the poor or vulnerable who bear the socio-economic and cultural implications of impacts on biodiversity. Examples of some of the implications of impacts on biodiversity assets and ecological infrastructure include:

- Degradation or loss of the ability of ecological infrastructure to provide services that are essential for supporting built infrastructure, contributing to water security and food security, and reducing the risk of disasters such as floods and droughts. For instance, the impact of invasive alien plant species on ecosystem services is

estimated to be a massive R6.5 billion worth of ecosystem services lost annually. If it were not for programmes like Working for Water, which clears these invasive species, the value of lost ecosystem services per year would be six times higher (Van Wilgen et al. 2008).

- Well managed and well functioning ecosystems are likely to play an important role in enhancing **resilience to the impacts of climate change**, including buffering human settlements and activities from the impacts of extreme climate events.
- **Loss of livelihoods through impacts to biodiversity assets that many South Africans depend on directly or indirectly** for production, trade or consumption. For example, it is estimated that between 9 and 12 million people in impoverished rural areas directly use natural resources such as fuel wood, wild fruits and wooden utensils as a source of energy, food and building material respectively (Shackleton 2004). It is also estimated that 27 million South Africans use traditional medicine as a form of health care, and that more than 133 000 people are employed through the utilisation of more than 2000 plant species for traditional medicinal purposes, which generates approximately R2.9 billion a year (Mander et al. 2007). Further, the value of the use of indigenous plants species in personal hygiene products, cosmetics, complementary medicines, food flavourants and essential oil products is estimated to be between R41 million and R57 million per year (DEA 2012).
- **Impacts to food security,** as agriculture is intricately dependent on biodiversity in many ways. Examples include the dependence on water for irrigation that is supported by healthy catchments, reliance of some cultivated crops on wild pollinators (an ecosystem service worth millions of rand a year to the Western Cape's deciduous fruit industry (Allsopp et al. 2008)), and provision of natural grazing areas for the livestock industry.
- **Tourism relies significantly on biodiversity assets**, the protected area network being a significant draw for tourists, generating numerous employment opportunities and contributing millions of Rand a year to South Africa's Gross Domestic Product (GDP). An emerging wildlife industry, game ranching including hunting, is estimated to generate a further R7.7 billion a year and creates 100 000 jobs.
- **Implications for livelihoods linked to estuaries, coastal and marine ecosystems**, for instance to local communities in areas surrounding the great St Lucia Lake system who currently harvest reeds and sedges worth over R4.7 million every year (Collings, 2009) or to communities that benefit from estuarine or inshore marine fisheries, the total value of which was estimated to be R1.2 billion per year in 2011 (Van Niekerk and Turpie 2012). Similarly, commercial fisheries in marine habitats were valued in 2010 at approximately R6 billion and employed about 27 000 people. A further 28 000 households were estimated to be practising subsistence fishing (DAFF 2012).

The implications of impacts on biodiversity highlight the importance of avoiding loss or degradation of natural habitat in priority areas, which support well-functioning landscapes and seascapes in the long term, and which in turn are able to support a range of social and economic activity.

These findings from the NBA – knowing where our important biodiversity is, and what drivers are exerting pressure on it across landscapes – are vital informants in identifying the strategic objectives, outcomes and actions around which South Africa's NBSAP is framed.

National Biodiversity Strategy and Action Plan

Conceptual framework of the NBSAP

South Africa's approach to biodiversity management is informed by a number of important conceptual elements which are reflected in the NBSAP.

Like South Africa's legislative and policy framework for biodiversity, the revised NBSAP is based on the fact that **biodiversity assets and ecological infrastructure directly underpin development and human well-being** and offer immense potential support to the country's development path, including enhancing resilience to global change. This is enabled by taking a **landscape approach** to working in partnerships across land- and seascapes to conserve, restore and sustainably use biodiversity, while enabling sustainable economic development, rural development, job creation and livelihoods. Building on this, recognizing that most of South Africa's important biodiversity is found outside protected areas, the need to **mainstream biodiversity** considerations into the policies, strategies and practices of other sectors is core to achieving national biodiversity targets.

The landscape approach and biodiversity mainstreaming necessitates that the revised NBSAP is **informed by knowledge**, including science-based and indigenous knowledge, that tell us what biodiversity we have, where it is and what state it is in. Policies, planning and management practices that are informed by relevant knowledge are critical to a robust strategy. This approach results in an integrated strategy that links to a range of different sectors which, at the level of implementation depends on **effective cooperative governance** across all spheres of government, amongst departments and other organisations. As an integrated strategy with explicit links and synergies between the strategies and plans of the biodiversity and other sectors, shared ownership of the NBSAP is thus an important component of its development and implementation.

The NBSAP seeks to play a **transformative role** in building capacity in the biodiversity sector, in optimizing the biodiversity economy in support of sustainable rural development, and in reducing the vulnerability of often poor and marginalized communities through strategic investments in ecological infrastructure that enhance the resilience of ecosystems. The revised NBSAP also **builds on what has been achieved** in the past 10 years. It lays a framework for **adaptive approaches** to management through research, planning and decision-making that is **informed by emerging knowledge foundations** and responds to emerging pressures on biodiversity or opportunities. The revised NBSAP aligns with what is in the strategic plans of key stakeholders to deliver an **action-driven, practical and prioritized** NBSAP for the short-term, while ensuring that the management, conservation and sustainable use of biodiversity over the long-term. The NBSAP is an **inclusive strategy** that respects, preserves, and maintains traditional knowledge, innovations and practices. In so doing, the revised NBSAP seeks to **align with South Africa's Constitution, national development priorities** and with the objectives, principles and targets of the CBD.

Structure of the NBSAP

The core strategy of South Africa's revised NBSAP is illustrated in Figure 12 below. At a high level, the strategy is framed by an overarching vision which outlines the long-term vision for the state of biodiversity in the country. Six strategic objectives reflect the most pressing issues that the NBSAP seeks to address. Each strategic objective is comprised of several outcomes, which are the priorities within each strategic objective. Each outcome is then broken down into a number of different activities. The logic underpinning the strategy and

action plan is that the implementation of the activities will collectively result in the achievement of the outcome, which in turn collectively contribute towards the achievement of the strategic objective.

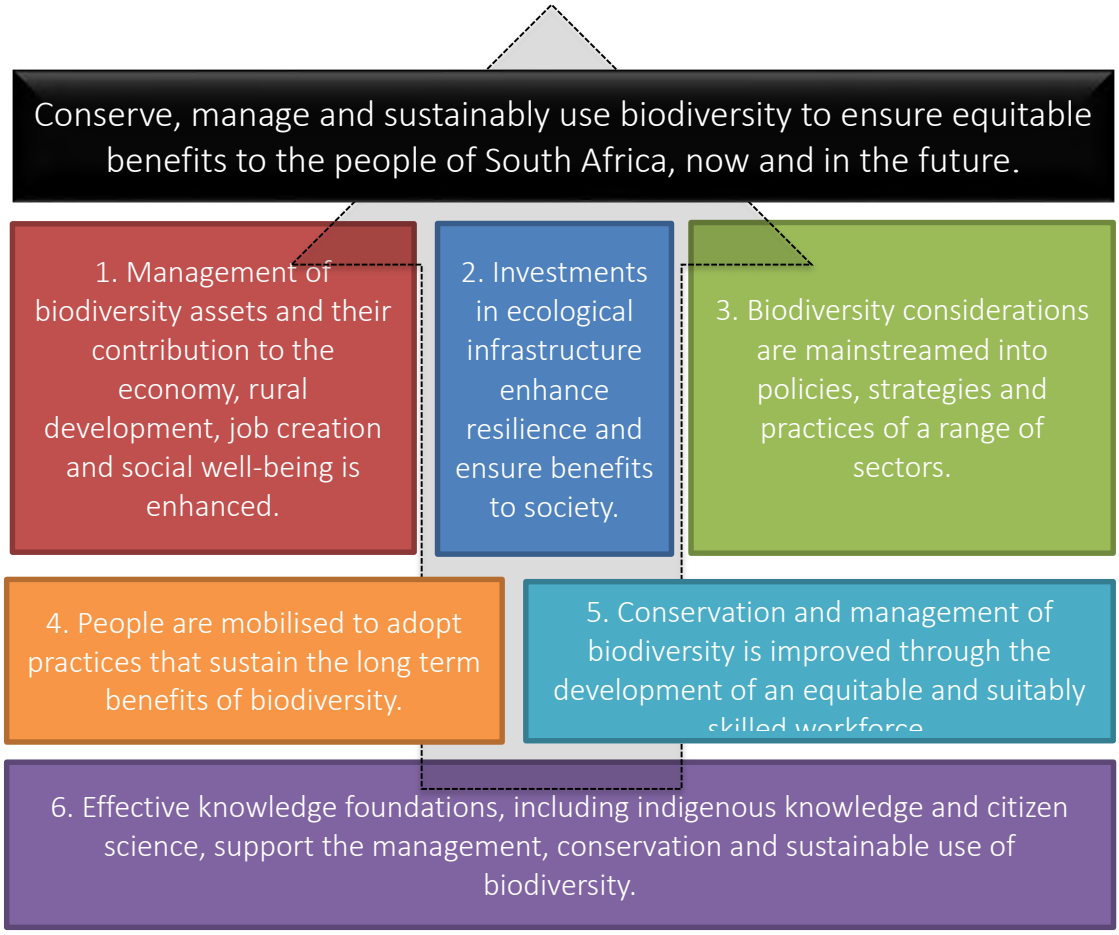

Figure 12. Summary of the National Biodiversity Strategy

Principles

This NBSAP is informed by principles that are distilled from those articulated in South Africa's constitution and the framework legislation for the environmental sector, the National Environmental Management Act (NEMA) (No. 107 of 1998). Further, their articulation in this strategy is informed by overarching priorities and objectives articulated in the NDP, NSSDAP, Biodiversity Act, National Biodiversity Economy Strategy (NBES), and the White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity (1997). These principles are:

1. A people-centred approach to biodiversity, recognising that the well-being of South Africa's people is dependent on the well-being of the environment.
2. Biodiversity contributes to sustainable development
3. Sustainable use of biodiversity promotes social development and economic growth.
4. Mainstreaming of awareness of the value and importance of biodiversity across society
5. The biodiversity sector contributes to the transformation of South Africa to a more equitable society.

NEMA articulates a people-centred approach to environmental management: "Environmental

management must place people and their needs at the forefront of its concern, and serve their physical, psychological, developmental, cultural and social interests equitably". The substantive principles articulated in the NSSDAP include the statement that "socioeconomic systems are embedded in and dependent on ecosystems". Strategic Objectives 1 and 2 of the revised NBSAP are concerned with enhancing the contribution of biodiversity assets and ecological infrastructure to sustainable development of a resilient economy and society.

South Africa's NSSDAP (2011 – 2014) states: "sustainable development implies the selection and implementation of a development option, which allows for appropriate and justifiable social and economic goals to be achieved, based on the meeting of basic needs and equity, without compromising the natural system on which it is based". Strategic Objective 3 of the NBSAP seeks to ensure that biodiversity considerations are mainstreamed into policy and planning decisions, to ensure that development is ecologically sustainable.

Strategic Objective 3 of the NBSAP needs to be understood within the context of the principles of "Full Cost-Benefit Accounting", and "Informed and Transparent Decision-Making" articulated in the White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity.

The first guiding principle stated in the White Paper is: "All life forms and ecological systems have intrinsic value." Systematic biodiversity planning needs to be based on a recognition of the intrinsic value of biodiversity across generations, as asserted in the NDP 2030, which recognises the need to: "protect the natural environment in all respects, leaving subsequent generations with at least an endowment of at least equal value".

The White Paper, NEMA and the NSSDAP stress the importance of sustainable use of natural resources – from NEMA: "…the development, use and exploitation of renewable resources and the ecosystems of which they are part do not exceed the resources that are necessary for long-term survival are not destroyed for short term gain". Ensuring effective knowledge foundations are in place to ensure that biodiversity is used sustainably is central to the purpose of Strategic Objective 6 of the revised NBSAP.

NEMA stresses both the importance of an integrated approach to environmental management and the need for awareness of the environment: "community wellbeing and empowerment must be promoted through environmental education, the raising of environmental awareness, the sharing of knowledge and experience and other appropriate means". An underlying theme in the revised NBSAP is the need for mainstreaming of biodiversity, based on greater awareness of its value and socioeconomic contribution. Strategic Objective 4 is concerned with effecting behaviour change to ensure sustainable use and conservation of biodiversity.

The principles articulated in NEMA frame a transformative agenda for the environmental sector, including: "equitable access to environmental resources, benefits and services to meet basic human needs and ensure human wellbeing must be pursued and special measures may be taken to ensure access thereto by categories of persons disadvantaged by unfair discrimination". This is to guide the development of an equitable and suitably skilled workforce for biodiversity conservation and management, as envisaged in Strategic Objective 5, as well as informing the manner in which the benefits derived from sustainable use of biodiversity assets and ecological infrastructure are allocated.

Vision

Conserve, manage and sustainably use biodiversity to ensure equitable benefits to the people of South Africa, now and in the future.

Strategic objectives

SO 1. Management of biodiversity assets and their contribution to the economy, rural development, job creation and social well-being is enhanced.

SO 2. Investments in ecological infrastructure enhance resilience and ensure benefits to society.

SO 3. Biodiversity considerations are mainstreamed into policies, strategies and practices of a range of sectors.

SO 4. People are mobilised to adopt practices that sustain the long term benefits of biodiversity.

SO 5. Conservation and management of biodiversity is improved through the development of an equitable and suitably skilled workforce.

SO 6. Effective knowledge foundations, including indigenous knowledge and citizen science, support the management, conservation and sustainable use of biodiversity.

National Action Plan

The action plan of the NBSAP breaks down each strategic objective into a comprehensive set of outcomes (summarised in Table 2). These outcomes are the priorities for the strategic objective.

This is followed by more detailed descriptions of each of the strategic objectives and their outcomes and a breakdown of the activities that address each outcome.

The description of each outcome is followed by a table listing the activities, with lead and support organisations involved in each activity, and the priority level of that activity. Activities were prioritised as high, medium or low according to their importance in achieving the outcome and secondly whether they were likely to receive funding or already were funded.

Outcome level indicators and targets are also provided in the tables for each outcome. As far as possible, the indicators and targets have been drawn from existing national or organizational strategic plans in South Africa. This has served two functions. While serving as a means to track progress towards implementing the NBSAP, the indicators and targets also enable alignment between the NBSAP and South Africa's development imperatives. This has ensured that the NBSAP is firmly integrated and aligned with the strategic priorities and plans of major role players in South Africa and therefore represents a common vision and plan for biodiversity management. More information about monitoring and evaluation is provided in the section on Institutional Coordination and Monitoring.

Table 2. Core strategy of the NBSAP

Vision: Conserve, manage and sustainably use biodiversity to ensure equitable benefits to the people of South Africa, now and in the future.						
Strategic objectives	Management of **biodiversity assets** and their contribution to the economy, rural development, job creation and social wellbeing is enhanced.	Investments in **ecological infrastructure** enhance resilience and ensure benefits to society	Biodiversity considerations are **mainstreamed** into policies, strategies and practices of a range of sectors.	People are mobilised to **adopt practices** that sustain the long-term benefits of biodiversity.	Conservation and management of biodiversity is improved through the development of an **equitable and suitably skilled workforce**.	Effective **knowledge foundations**, including indigenous knowledge and citizen science, support the management, conservation and sustainable use of biodiversity.
Outcomes (number of activities per outcome)	1.1 The network of protected areas and conservation areas includes a representative sample of ecosystems and species, and is coherent and effectively managed 1.2 Species of special concern are sustainably managed 1.3 The biodiversity economy is expanded, strengthened and transformed to be more inclusive of the rural poor 1.4 Biodiversity conservation supports the land reform agenda and socio-economic opportunities for communal land holders	2.1 Restore, maintain and secure important ecological infrastructure in a way that contributes to rural development, long-term job creation and livelihoods 2.2 Ecosystem-based adaptation (EbA) is shown to achieve multiple benefits in the context of sustainable development	3.1 Effective science-based biodiversity tools inform planning and decision-making 3.2 Embed biodiversity considerations into national, provincial and municipal development planning and monitoring 3.3 Strengthen and streamline development authorisations and decision-making 3.4 Compliance with authorisations and permits is monitored and enforced 3.5 Appropriate allocation of resources in key sectors and spheres of government facilitates effective management of biodiversity, especially in biodiversity priority areas 3.6 Biodiversity considerations are integrated into the development and implementation of policy, legislative and other tools	4.1 People's awareness of the value of biodiversity is enhanced through more effective coordination and messaging 4.2 People are mobilised to conserve and sustainably use biodiversity	5.1 Macro-level conditions enabled for skills planning, development and evaluation of the sector as a whole 5.2 An improved skills development system incorporates the needs of the biodiversity sector 5.3 Partnerships are developed and institutions are capacitated to deliver on their mandates towards improved service delivery	6.1 Relevant foundational data sets on species and ecosystems are in place and well coordinated 6.2. The status of species and ecosystems is regularly monitored and assessed. 6.3 Geographic priority areas for the management, conservation and restoration of biodiversity assets and ecological infrastructure are identified based on best available science 6.4 Management-relevant and policy-relevant research and analysis is undertaken through collaboration between scientists and practitioners 6.5 Knowledge base is accessible and presented in a way that informs decision-making
	(21 activities)	(8 activities)	(37 activities)	(7 activities)	(12 activities)	(29 activities)

SO 1. Management of biodiversity assets and their contribution to the economy, rural development, job creation and social wellbeing is enhanced.

Biodiversity assets are species, ecosystems and other biodiversity-related resources that generate ecosystem services, support livelihoods, and provide a foundation for economic growth, social development and human wellbeing, both now and in the future. Management of biodiversity assets in this strategic objective includes their effective conservation and sustainable use.

South Africa's significant wealth in biodiversity assets needs sound management and conservation to ensure their contribution to the economy, rural development, job creation and social well-being now and in the future. This includes effective management of a network of protected areas and conservation areas comprising a representative sample of the ecosystems and species that occur in South Africa (Outcome 1.1), and sustainably managing species of special concern (which play an important role in maintaining well-functioning ecosystems and have particular ecological, economic or cultural significance) (Outcome 1.2). It also requires expanding, strengthening and transforming the biodiversity economy to optimise economic opportunities in a way that is inclusive of the rural poor and supports local economic development that is sustainable over the long term (Outcome 1.3).

Sustainable management and use is emphasized as overexploitation of many species and ecosystems remains a major threat to biodiversity. Sustainable use means using biodiversity assets in a manner that avoids their degradation or depletion (at a rate that allows for renewal). This requires managing biodiversity assets in a manner that also ensures their resilience to pressures of climate change, invasive alien species and other inter-connected elements of global change. Doing so is an essential aspect of management effectiveness and ensuring sustainability in a manner that will support the land reform agenda and socio-economic opportunities for communal land holders (Outcome 1.4).

1.1 The network of protected areas and conservation areas includes a representative sample of ecosystems and species, and is coherent and effectively managed

This outcome seeks to secure a representative sample of ecosystems and species (biodiversity assets) in a network of protected areas and conservation areas that may be managed by government, private or communal landowners. Protected areas and conservation areas have specific meanings in South Africa that stems from the legislation used to secure the land or sea, not the ownership of the land. In other words, protected areas and conservation areas can be owned and managed by government, communal and private landowners. *Protected areas* are areas of land or sea that are formally declared through the Protected Areas Act (No. 57 of 2003) and are managed mainly for biodiversity conservation. These areas form part of the protected area estate. *Conservation areas* are areas that are not formally protected by the Protected Areas Act but are nevertheless managed at least partly for biodiversity conservation. They contribute to the broader conservation estate.

South Africa has made progress in increasing the protection of biodiversity, particularly the extent of land-based protection, but there remain unprotected

and under-protected ecosystems and species. Offshore marine ecosystems are the most poorly protected ecosystems of all South Africa's ecosystems, followed by wetland ecosystem types, rivers, then coastal and inshore ecosystems. The expansion of protected areas to include a representative sample of ecosystems and species is still needed, particularly with respect to allowing for ecosystem responses to climate change and incorporating the network of Important Biodiversity and Bird Areas.

Expansion is guided by the National Protected Area Expansion Strategy, which focuses on consolidating and expanding the protected area network as well as strengthening the management of existing protected areas. This strategy must be updated to take into account the impacts of various key drivers of change, such as changing weather patterns and invasive alien species, and emerging issues related to the growing range of property owners responsible for managing protected areas.

Biodiversity stewardship programmes have significantly supported protected area expansion (at much lower cost to the state than land acquisition) as well as improved management of biodiversity priority areas outside protected areas. Strengthening the institutional capacity of biodiversity stewardship programmes and the suite of incentives (such as access to technical expertise) for biodiversity stewardship is critical to enhancing their contribution to protected area and conservation area expansion. With modest increases in resources, biodiversity stewardship programmes could make an even larger contribution, including in supporting the land reform agenda and socio-economic opportunities for communal land-owners (see outcome 1.4). Management effectiveness in protected areas and in conservation areas will also support achievement of biodiversity objectives, enhanced socio-economic benefits and climate change resilience.

Only **ecosystems and species in the protected area estate count towards the achievement of targets** for the protection of a representative sample of ecosystems and species. This is because the conservation of biodiversity on these areas is attached to the title deed of the land or sea and is binding on the property. Although this is not the case in conservation areas (i.e. conservation is not legally binding on the property), many conservation areas make a significant contribution to the conservation of biodiversity assets outside of protected areas.

Biodiversity stewardship provides mechanisms through which these contributions to both the protected area estate and the conservation estate can be secured. Biodiversity stewardship involves voluntary commitments from landowners (government, communal or private) through different types of agreements with conservation authorities to protect and manage land in biodiversity priority areas. Contributions to the conservation estate include Biodiversity Management Agreements governed by the Biodiversity Act or Biodiversity Agreements bound by contracts. Other types of biodiversity stewardship include those that result in protection of land under the Protected Areas Act.

Figure 13. Protected areas, the conservation estate and biodiversity stewardship

In many cases, protected areas and conservation areas are contiguous, and in some cases extend over administrative boundaries, national borders or different management authorities. The contiguous nature of these relatively large natural areas enhances the management of biodiversity assets and their contribution to the economy, rural development, job creation and social wellbeing, particularly if their management is coordinated through the formation of a Biosphere Reserve or Transfrontier Conservation Areas (TFCA). TFCAs and Biosphere Reserves seek to conserve important transboundary ecosystems and support the socio-economic development in these areas. Strategies that provide strategic direction for enhanced management of these areas, such as the

South African National Man and the Biosphere Strategy currently under development, should be supported by enhanced inter-agency cooperation. Access and benefit sharing from protected areas, and conservation areas such as in Biosphere Reserves and TFCAs, needs to be strengthened as an important part of realising the full potential of these areas to contributing to national, provincial local development priorities. These are core areas for the provision of a range of economic, social, cultural and spiritual benefits that support biodiversity economies (Outcome 1.3).

In some cases there will be certain species that are critically endangered and require protection currently outside of protected areas at one site in order to avoid habitat loss and risk of extinction.

1.1 The network of protected areas and conservation areas includes a representative sample of ecosystems and species, and is coherent and effectively managed			
INDICATOR	Areas protected under the Protected Areas Act (ha, km, km2)	TARGET	By 2028, in protected areas: 10.8m land-based hectares, 353km inshore, 210 000km^2 marine offshore in SA's EEZ plus 93 300km^2 marine offshore in Prince Edward Islands EEZ
	Number of hectares in the conservation estate		By 2019, 13.2 % (16 121 794 ha)
	METT score		By 2019, 90% of area of state managed protected areas assessed annually with a METT score above 67%

Activities		Lead	Support	Priority
1.1.1	Expand the protected area estate across all ecosystems (including marine, estuarine, freshwater and terrestrial), based on the Protected Area Expansion Strategies at national and provincial levels	DEA and provincial departments	SANBI, SANParks, local authorities, NGOs, private,	High
1.1.2	Expand the network of conservation area through mechanisms under the Biodiversity Act, contract law and other informal agreements between the landowner and conservation authority.	DEA and provincial departments	A range of role players: SANBI, NGOs, corporates, parastatals, other state departments	High
1.1.3	Strengthen the institutional capacity of biodiversity stewardship programmes and the suite of incentives (such as access to technical expertise) to enhance their contribution to protected area and conservation area expansion, including through implementation of the Biodiversity Stewardship Business Case.	DEA and provincial departments, NGOs, private sector	A range of role players: SANBI, NGOs, corporates, parastatals, other state departments	High

1.1.4	Strengthen and monitor management effectiveness in protected areas and conservation areas, with an emphasis on biodiversity objectives, socio-economic benefits and climate change resilience.	DEA and provincial departments	SANParks, a range of role players: SANBI, NGOs, corporates (private sector), parastatals, other state departments	Med
1.1.5	Strengthen inter-agency cooperation in the management of protected and conservation areas, within South Africa and internationally in the context of Transfrontier Conservation Areas	DEA	Peace Parks Foundation, SANParks, iSimangaliso, provincial government, SAWC	Low
1.1.6	Strengthen access to and benefit sharing from protected areas, including assessing the potential for appropriate sustainable consumptive resource use in protected areas, and include this in protected area management plans	DEA and provincial departments	SANParks, conservation authorities	Low
1.1.7	Strengthen protection for Critically Endangered species occurring only at single sites	DEA	SANBI, provincial departments, NGOs	Med

1.2 Species of special concern are sustainably managed

Species are the building blocks of ecosystems. They play an important role in maintaining well-functioning ecosystems and thus in supporting the provision of ecosystem services. *Species of special concern are those that have particular ecological, economic or cultural significance.* They include species that are harvested from the wild (including medicinal plants and harvested marine species), threatened species (e.g. cycads), food plants (e.g. wild crop relatives), keystone species (e.g. rhino), species that provide the basis for non-consumptive ecotourism (e.g. whales, sharks, seabirds and turtles), and species that are an important part of cultural and religious practices. Many of these species become over-harvested, or suffer habitat loss, which threatens their persistence.

In the last 10 years South Africa's achievements in addressing the protection and sustainable management of these species have included the publication of new, and amendments to various existing, norms and standards, regulations, and guidelines published and implemented in terms of the Biodiversity Act (developing, implementing, reviewing and updating of legislative and other tools that ensure the protection of species is dealt with in Outcome 3.6). Included in this are the Norms and Standards for Biodiversity Management Plans for Species (BMP-S) and the subsequent publication in terms of the Biodiversity Act of Biodiversity Management Plans for several species of special concern. While developing, implementing, reviewing and updating of legislative and other tools that ensure the protection of species is dealt with in Outcome 3.6, the development, implementation and sustainably funding of BMP-S and recovery plans (rehabilitation programmes) for species that are being unsustainably harvested is key to sustainable management of species of special concern. Investing in sustainable management and efficient use of species of special concern, particularly marine living resources, can make a significant contribution to job creation and sustainable livelihoods, while improving the environment and protecting indigenous genetic resources.

Another important activity in achieving this outcome is maintaining an effective Scientific Authority that monitors the legal and illegal trade in species listed as

threatened or protected (in terms of section 56 of the Biodiversity Act) and species included on the Appendices to CITES, and makes recommendations to an issuing authority on applications for permits to trade in these species. The Scientific Authority also makes and publishes non-detriment findings (NDFs) on the impact of trade on the survival of species in the wild and advises on the registration of ranching operations, nurseries, and captive breeding facilities.

In some cases, *ex situ* conservation is and will become necessary for the conservation of certain species to address impacts such as unsustainable use, habitat transformation or climate change. Integrated programmes to support sustainable use may include propagation programmes (including captive breeding and cultivation of wild species) to relieve pressure of harvesting, and may also include multi-species approaches for addressing links in legal and illegal trade of different species (or parts thereof, such as rhino horn). The need for such integrated programmes, *ex situ* conservation programmes, and recovery plans for certain species to address the management and protection of species of special concern highlights the challenges for sustainably managing species over the next 10 years, requires sustainable funding and coordination of efforts by stakeholders to work effectively towards this Outcome.

1.2 Species of special concern are sustainably managed			
INDICATOR	Status of threatened and protected species	TARGET	No species status declines
	% of threatened species conserved *ex situ*		60% of threatened plant species
	% of species with *ex situ* collections active in restoration programmes		1% of plant species

Activities		Lead	Support	Priority
1.2.1	Develop, implement and sustainably fund biodiversity management and/or recovery plans for prioritised species of special concern	DEA	DAFF, SANBI, NGOs	Med
1.2.2	Ensure sufficient *ex situ* conservation of threatened and useful species to address impacts from climate change, habitat transformation and unsustainable use.	SANBI's botanical and zoological gardens	DEA and provincial conservation authorities	High
1.2.3	Establish integrated programmes to support sustainable use of threatened species including medicinal species and horticultural plants, including propagation programmes, to relieve pressure on harvesting	DEA	SANBI, provincial departments, NGOs	Med
1.2.4	Maintain an effective Scientific Authority that provides scientific oversight for species in trade	DEA	SANBI, provincial conservation authorities, SANPARKS, Nat Zoological Gardens, Natural History Museum, research institutions.	High

1.3 The biodiversity economy is expanded, strengthened and transformed to be more inclusive of the rural poor

Biodiversity is recognised as fundamental to economic growth and sustainable development. Growing sustainable, inclusive and transformed biodiversity economies with communities is a priority for South Africa. Biodiversity economies focus on developing economic opportunities linked to biodiversity assets that support local economic development that is not harmful to biodiversity. The biodiversity economy has the potential to support a range of business and employment opportunities that promote alternative productive land uses and sustainable utilisation of biodiversity, especially in rural areas, such as through biotrade and bioprospecting, the wildlife and marine wildlife sectors, and ecotourism.

While there is a growing biodiversity economy in South Africa it requires coordination and leadership to avoid fragmented developmental interventions and to harness the benefits in a way that is inclusive, transformative and sustainable. Towards this, DEA, in consultation with other stakeholders, has developed National Biodiversity Economy Strategies (NBES) for the natural products sector and the wildlife sector to advance South Africa's biodiversity economy over the next 10 years. The objectives of the NBES are to provide national coordination, leadership and guidance on the commercialisation and trade of biodiversity assets, to promote and support the sustainable commercial use of such biodiversity, to contribute to the transformation of the biodiversity economy sector, and to establish facilities for the promotion and enhancement of the use of such biodiversity.

The NBES identifies biodiversity economy transformation (BET) nodes to focus efforts of various partners in the development of prosperous and sustainable biodiversity economies that supports social and economic development, biodiversity economy transformation, poverty alleviation, and job creation. These nodes are informed by, amongst other criteria, the Presidential Poverty Nodes for government action, the areas prioritised by the DRDLR, and local economic development (LED) imperatives of local and provincial government.

Although the existing NBES address tourism, a strategy to sustainably optimise the biodiversity-based tourism sector is needed to build on ecotourism opportunities linked to biodiversity assets, such as protected areas, TFCAs and Biosphere Reserves. Additionally, these strategies are predominantly focused on biodiversity assets in terrestrial ecosystems, extending to freshwater ecosystems as relevant. Strategies to address the sustainable optimisation the marine wildlife sector is also necessary (under Operation Phakisa, marine protection is seen as a key priority for unlocking the ocean economy).

1.3 The biodiversity economy is expanded, strengthened and transformed to be more inclusive of the rural poor			
INDICATOR	Increase in average annualised GDP growth rate of the SA bioprospecting and wildlife sectors	TARGET	By 2030, 10% increase

Activities	Lead	Support	Priority

1.3.1	Strengthen the contribution of the natural products sector, including biotrade and bioprospecting, to the national economy, based on the National Biodiversity Economy Strategy (NBES)	DEA	All spheres of government, public entities, private sector, academic and commercial researchers, and NGO's	High
1.3.2	Strengthen the contribution of the wildlife sector to the national economy, based on the National Biodiversity Economy Strategy (NBES)	DEA	All spheres of government, public entities, private sector, academic and commercial researchers, and NGO's	High
1.3.3	Develop a strategy to sustainably optimise the marine wildlife sector	DEA	DAFF, SANBI, NGOs, other support organisations	Med
1.3.4	Develop a strategy to sustainably optimise the biodiversity-based tourism sector	DEA	NDT, SANBI, SA Tourism, SANParks, provincial environment departments and conservation authorities	Med
1.3.5	Pilot biodiversity economy transformation nodes, as a model for demonstrating multiple benefits from the biodiversity economy through partnerships	DEA, other organisations may act as facilitators e.g. SAHGCA	All spheres of government, public entities, private sector, communities, academic and commercial researchers, and NGO's	High

1.4 Biodiversity conservation supports the land reform agenda and socio-economic opportunities for communal land holders

The management and conservation of biodiversity assets has the potential to support land reform and create socio-economic opportunities for communal land holders in support of local economic development. While there are close links between this outcome and others, the focus of this outcome is on the mechanisms and actions for addressing the specific context of land reform and conservation.

This includes strengthening the Land Reform and Biodiversity Stewardship Initiative (LRBSI), a tripartite initiative between DRDLR, DEA and SANBI that started in 2008. It functions as a community of practice focusing on land reform, communal lands, and biodiversity stewardship to demonstrate successful delivery of socio-economic and conservation benefits at specific sites and develop guidelines, strategies and plans to support scaling up successful practices. The initiative should be strengthened to fulfil its mandate and reinforce linkages to other programmes that support land holders, such as support to emerging farmers through the DEA Land User Incentives programme.

Settlement of land claims in protected areas remains a priority, as does the role of the People and Parks Programme in achieving its mission of supporting biodiversity conservation through the creation and rehabilitation of infrastructure in and around protected areas for community beneficiation, including through facilitating the resolution of protected area land claims. Biodiversity stewardship is an important mechanism through which socio-economic

opportunities for communal land owners, including those on restituted land, can be supported. Biodiversity stewardship programmes play an important role in this regard, demonstrating that conservation can work hand in hand with land reform and support rural livelihoods (links to Outcome 1.1).

1.4 Biodiversity conservation supports the land reform agenda and socio-economic opportunities for communal land holders			
INDICATOR	Number of settled land claims in protected areas / Protected area estate expanded through the land claim process (ha)	TARGET	Currently not monitored
	Number of settled land claims outside protected areas that include biodiversity conservation in the settlement agreement		Currently not monitored
	Number of biodiversity economy projects supported through provincial Biodiversity Stewardship Programmes		Number of projects /annum

Activities		Lead	Support	Priority
1.4.1	Strengthen the Land Reform Biodiversity Stewardship Initiative, including approval of guidelines, strategies and implementation plans developed through the DEA-DRDLR-SANBI alliance	DEA, DRDLR, SANBI	Provincial departments, NGOs	High
1.4.2	Facilitate the settlement of land claims in protected areas and the conservation estate	DEA, DRDLR, CLCC	Provincial departments	High
1.4.3	Develop, enhance and maintain socio-economic opportunities for communal landowners from conservation initiatives in restituted land on biodiversity priority areas	DEA	DRDLR, provincial departments, NGOs	Med

SO 2. Investments in ecological infrastructure enhance resilience and ensure benefits to society

Ecological infrastructure[10] refers to naturally functioning ecosystems, such as wetlands, healthy mountain catchments and rivers that deliver valuable services to people. These ecosystems play as important a role as built infrastructure in providing services and underpinning South Africa's socio-economic development.

Drivers of change, such as the spread of invasive alien species, land degradation and changing weather patterns due to climate change, impact on the ability of ecological infrastructure to provide essential services, which influences human health and welfare. Investments in the maintenance, restoration and protection of ecological infrastructure enhances the resilience of ecosystems to better withstand pressures from climate change, including buffering human settlements from the impacts of extreme climate events, and to deliver basic services such as clean water (Outcome 2.1). Investing in ecological infrastructure also protects and enhances built infrastructure, supports rural development and creates jobs. This work does not require the development of new mechanisms or instruments. It involves identifying priority ecological infrastructure, engaging organisations that would benefit from or have a key responsibility for investing in these ecosystems, and integrating ecological infrastructure into existing practices, programmes of work and institutional structures, such as planning, mapping, restoration and partnerships between the state and private landowners.

The ecosystem services that are currently the focus of investment in South Africa are those related to water and disaster risk reduction, with climate change adaptation elements in both of these. The use of biodiversity and ecosystem services (such as those delivered by ecological infrastructure) as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change is called 'ecosystem-based adaptation' (Outcome 2.2) and is part of enhancing resilience of people and the economy to climate change (highlighted as a need in the NDP). This strategic objective seeks to harness the potential of both ecological infrastructure and ecosystem-based adaption as two approaches that deliver multiple services and benefits across landscapes in the context of sustainable development, and contribute to the wellbeing of society.

2.1 Restore, maintain and secure important ecological infrastructure in a way that contributes to rural development, long-term job creation and livelihoods

The notion of investing in ecological infrastructure represents a new approach to understanding and communicating the core intention of maintaining and restoring natural ecosystems that provide valuable services. The shift from communicating about ecosystem services to communicating the concept of ecological infrastructure (which can be understood as the source of the service) has taken place in the past few years. It is related to the fact that ecological infrastructure is a more tangible concept, allows focus on discrete elements in the landscape, and builds on the notion that, like 'built' infrastructure,

[10] References drawn from in this section include SANBI (2014 d,e) and RSA (2014).

ecological infrastructure requires investment through proper management, maintenance and sometimes restoration to ensure long-term returns. Ecological infrastructure has already been integrated into institutional structures, programmes of work and practices such as planning, mapping and restoration. A number of landscape level partnership initiatives have been formed towards the improved management of ecological infrastructure for the services it delivers.

Investment in ecological infrastructure should however focus on spatially strategic and systematically identified areas. Best available biodiversity information and spatial biodiversity planning methods should be used to provide the basis for mapping and prioritising ecological infrastructure, recognising that priority ecological infrastructure may vary according to the particular service that is of interest. For example, a map of priority ecological infrastructure supporting water services may identify different landscape features compared to a map of priority ecological infrastructure for disaster risk reduction. Prioritisation methods should include both ecological and socio-economic factors, considering the beneficiaries and the providers of the ecosystem services. Such prioritization should guide planning of investments in ecological infrastructure, such as through the DEA NRM programmes, and efforts to scale up restoration and maintenance of ecological infrastructure. It should also guide efforts to secure ecological infrastructure, such as strategic water source areas or important marine ecological infrastructure that are best managed under appropriate legal protection.

As water-related services are a primary focus of investing in ecological infrastructure, there is a need for strong alignment with the National Water Resource Strategy and the Water Research, Development and Innovation (RDI) Roadmap. Similarly, agriculture and rural development policies and their implementation should align with ecological infrastructure priorities, in order to ensure that ecological infrastructure support the scale up of agriculture and rural development initiatives (linking to Outcome 3.6 of the NBSAP).

2.1 Restore, maintain and secure important ecological infrastructure in a way that contributes to rural development, long-term job creation and livelihoods			
INDICATOR	Number of significant, integrated water- related ecological infrastructure maintenance or improvement interventions Hectares of land under restoration/restoration Number of wetlands rehabilitated	TARGET	By 2019, 20 integrated interventions in each of 5 key rural Strategic Water Source Areas by March 2019 By 2019, total of 1 370 600 ha restored (1 218 106 ha (DEA) and 152 500 ha (DAFF)), with 3 230 271 ha of follow up treatment by DEA By 2019, 695
	Number of emerging invasive species targeted for early detection		By 2019, 300
	Number of ha of firebreaks and prescribed burning prepared to prevent ecologically damaging fires.		By 2019, 398 886 ha

Activities		Lead	Support	Priority
2.1.1	Support the implementation of chapter 5 (water resource protection) of the National Water Resource Strategy (NWRS)	DWS, DEA	SANBI, DAFF, CMAs, local government	High

2.1.2	Develop systematic approach, including methods, techniques, and expertise, for mapping and prioritising ecological infrastructure	DEA and SANBI	CSIR, Research institutions, DST, WRC, NGOs, SAEON	High
2.1.3	Scale up and improve integration of efforts to restore degraded ecological infrastructure and maintain ecological infrastructure in good condition, including government led programmes such as DEA's Working for Water, Working for Wetlands and other, and DAFF's SoilCare, VeldCare, LandCare etc.	DEA, DAFF, DWS, national and provincial conservation authorities and environment departments, municipalities	NGOs, municipalities, CBOs, WUAs, conservation authorities, private sector, DRDLR	High
2.1.4	Improve how biodiversity assets and ecological infrastructure is incorporated into the planning of DEA's Natural Resource Management programmes	DEA, SANBI, CSIR	DAFF, DWS, ARC, research institutions, consultancies, SAEON	High
2.1.5	Secure ecological infrastructure that has been systematically prioritised through appropriate mechanisms, such as National Environmental Management Act, Protected Area Act, Biodiversity Act, National Water Act, National Forest Act, Conservation of Agriculture Resources Act (CARA), Minerals and Petroleum Resources Development Act, buffer zone policies, agricultural and municipal zoning, and contractual agreements	Leads as per legislation DEA, DWS, DAFF, DMR	Conservation authorities, SANBI, provincial environment departments, CMAs, etc.	High (outer years – depends on 2.1.2)
2.1.6	Support investments in ecological infrastructure through the implementation of the Water Research, Development and Innovation (RDI) Roadmap	DST	WRC, DEA, DWS, SANBI	Med

2.2 Ecosystem-based adaptation (EbA) is shown to achieve multiple benefits in the context of sustainable development

The concept of ecosystem-based adaptation, being "the use of biodiversity and ecosystem services as part of an overall adaptation strategy to help people to adapt to the adverse effects of climate change" first emerged through a CBD Ad Hoc Technical Expert Group on Biodiversity and Climate Change (AHTEG) in 2009. As with the notion of ecological infrastructure, EbA recognizes that biodiversity and healthy, well-functioning ecosystems provide natural solutions that build resilience and help society adapt to the adverse impacts of climate change. EbA is intended to simultaneously deliver direct and tangible benefits to targeted communities, be beneficial for the environment, and help to safeguard development in the face of climate change. This kind of investment can target efforts to lessen flooding, improve water and soil quality, shore up food security, and contribute to human health, safer and more secure livelihoods (especially for the poor and vulnerable), job creation and poverty alleviation.

Since 2009, the concept of EbA as a means of adapting to climate change and achieving multiple benefits has gained traction and various international processes have called for countries to pilot and share case studies of EbA implementation. In 2013, DEA requested SANBI to provide science-based policy

advice on the development of biodiversity and climate change adaptation implementation plans in support of DEA's broader programme of work on biodiversity and climate change. Over the next 10 years, the development of an overarching implementation plan (building on the processes and recommendations of the DEA report entitled 'Climate Change Adaptation Plans for South African Biomes, 2015) are needed to guide ecosystem-based adaptation that delivers multiple benefits across South Africa's biomes.

This Outcome requires bringing together various actors to implement projects at the municipal or local level, document lessons and showcase results in support of scaling up successes for greater impact. This is partly enabled through projects funded by the National Implementing Entity (NIE), which aims to deliver tangible results through the implementation of projects that address climate change adaptation in vulnerable communities in South Africa and make the case for further investments in climate change adaptation.

2.1 Ecosystem-based adaptation (EbA) is shown to achieve multiple benefits in the context of sustainable development			
INDICATOR	Implementation plan for ecosystem-based adaptation developed, funded and implemented	TARGET	By 2020, successful implementation results in resilience to climate change in communities linked to pilot projects.

Activities		Lead	Support	Priority
2.2.1	Develop, fund and implement an implementation plan for ecosystem-based adaptation in the context of climate change adaptation and sustainable development	SANBI, DEA	Municipalities, provincial environment departments, conservation authorities, DST, NGOs	High
2.2.2	Capture lessons from National Implementing Entity (NIE) projects to illustrate the benefits of ecosystem-based adaptation	SANBI, DEA	Municipalities, provincial environment departments, conservation authorities, NGOs	High

SO 3. Biodiversity considerations are mainstreamed into policies, strategies and practices of a range of sectors

Biodiversity mainstreaming is the process of embedding biodiversity considerations into policies, strategies and practices of key public and private actors that impact or rely on biodiversity, so that it is conserved and sustainably used both locally and globally[11]. Mainstreaming biodiversity is central to the achievement of South Africa's landscape approach to managing biodiversity. It relies on partnerships between different sectors across land- and seascapes and where protected areas sit alongside a matrix of other land- and sea-use types that enhance biodiversity conservation and ecosystem resilience, whilst supporting socio-economic development. Mainstreaming seeks to address biodiversity loss and ecosystem degradation outside of protected areas, while strengthening the protection of such areas within land- and seascapes through the promotion of biodiversity-compatible land/sea uses and optimal land/sea use decisions. South Africa has achieved significant gains through its biodiversity mainstreaming initiatives with the integration of biodiversity into the national development agenda, including the National Development Plan.

This strategic objective seeks to build on these foundations, ensuring that, through the use of science-based biodiversity tools (Outcome 3.1), biodiversity considerations are integrated into national, provincial and municipal planning and monitoring, including into the strategies and plans of key production sectors (Outcome 3.2), and strengthen development authorisations and decision-making (Outcome 3.3). It also seeks to ensure that compliance with authorisations and permits is monitored and enforced (Outcome 3.4) and that appropriate allocation of resources in key sectors and spheres of government facilitates effective management of biodiversity, especially in biodiversity priority areas (Outcome 3.5). As an enabling measure, biodiversity considerations must be integrated into the development and implementation of policy, legislative and other tools (national and multilateral agreements, both those of the biodiversity sector and beyond it) (Outcome 3.6).

3.1 Effective science-based biodiversity tools inform planning and decision-making

South Africa has developed a number of successful and practical tools that are well used to support planning and decision-making, many of which have been developed and applied in an integrated and demand-led mainstreaming context in order to meet sector specific needs. These tools include maps of biodiversity priority areas developed using systematic biodiversity planning and the best available science; guidelines that accompany and add value to maps of biodiversity priority areas, including guidelines for land/sea use options in biodiversity priority areas as well as guidelines that inform decision-making in production sectors (e.g. the Mining and Biodiversity Guideline, DEA et al. 2013). Many of these maps and guideline documents are available through online platforms such as the Biodiversity Advisor, as well as offline (e.g. on CD) in cases where online access is limited. Key to the successful impact of these tools is that they are developed with the relevant sector, ensuring that the tools are or become embedded in the sector that they target.

[11] Huntley, B.J. and K.H. Redford (2014)

The priorities for this NBSAP are to ensure that new tools are developed to support planning and decision-making, and that both new and existing tools are implemented and maintained. Bioregional plans, which map and identify Critical Biodiversity Areas (CBAs), and biodiversity management plans for ecosystems are especially important tools for informing land-use planning, environmental authorisations and natural resource management outside of protected areas. Bioregional plans are powerful tools as they must be used to inform spatial development frameworks (SDFs), integrated development plans (IDPs) and land-use schemes (LUS) (link to Outcome 3.2).

An important consideration in the development and maintenance of tools is the integration of climate change considerations both from a spatial and land use compatibility perspective, thus enabling these to become the tools for mainstreaming biodiversity and climate change considerations into other sectors. Needs have been identified for new tools that:

- Support mitigation and adaptation to climate change threats.
- Incorporate biodiversity as a strategic risk in planning and decision-making in the private sector.
- Integrate biodiversity considerations into the fisheries industry such as a biodiversity and fisheries guideline.
- Support the green economy and sustainable development policies, strategies and implementation initiatives.

3.1 Effective science-based biodiversity tools inform planning and decision-making			
INDICATOR	Number of tools developed to support mainstreaming of biodiversity assets and ecological infrastructure in production sectors and resource management	TARGET	By 2020, ten new tools produced and fifteen knowledge resources demonstrating the value of biodiversity developed and disseminated
	Number of biome adaptation plans implemented		By 2019, implemented Land Degradation National Action Plan and Biodiversity Climate Change Adaptation Plans for 9 biomes

Activities		Lead	Support	Priority
3.1.1	Develop new science-based biodiversity tools to inform planning and decision-making	SANBI	DEA, DWS, DST, provincial environmental departments, DWS, DMR, DAFF, DRDLR, local government, other national departments, NGOs, sector bodies, research institutions	High
3.1.2	Maintain new and existing science-based biodiversity tools	Industry bodies, other departments, SANBI	DEA, DST, provincial environmental departments, DWS, DMR, DAFF, DRDLR, local government, other national departments, NGOs, sector bodies, research institutions	High
3.1.3	Develop and publish bioregional plans and biodiversity	Municipalities or provincial	SANBI, DEA, provincial environment	Med

	management plans for ecosystems	conservation authorities or provincial environment departments	departments (where initiated by other organisations)	

3.2 Embed biodiversity considerations into national, provincial and municipal development planning and monitoring

The development of science-based biodiversity tools such as bioregional plans or other tools (Outcome 3.1), enables the integration of biodiversity considerations in development planning and monitoring at national, provincial and municipal levels. The results of a number of successful efforts to date provide the foundation for priorities in this NBSAP.

In 2012, South Africa's National Development Plan was published with clear recognition of the importance of biodiversity and ecosystems to the development path of the country. The subsequent National Infrastructure Plan set out a series of Strategic Integrated Projects (SIPs), which provide the framework for a massive investment in infrastructure development in South Africa. A clear priority for the NBSAP is to ensure the integration of biodiversity considerations into the SIPs as well as subsequent national development planning initiatives.

Biodiversity conservation and management can support broader socio-economic goals of rural development and job creation, and has the potential to contribute to the livelihoods of land reform beneficiaries and communal landowners. Similarly, integrating biodiversity, climate change and IAS considerations into the planning, practices and monitoring efforts of other sectors, including water, agriculture, coastal management, renewable and non-renewable energy, land reform and rural development, forestry, fisheries and mining is important in delivering multiple benefits in a sustainable development context.

Opportunities exist particularly in the agriculture, water, land reform sectors, and at a local level in the municipal planning framework, including disaster risk reduction, for strengthening development through the integration of biodiversity considerations. Already foundations have been laid for integrating biodiversity considerations into the planning and regulatory frameworks of other sectors, such as agriculture, forestry, mining, mariculture and aquaculture. For instance, the development and application in the forestry sector of the biodiversity screening tool uses biodiversity planning information to identify sites that should not be afforested and can thereby be excluded from plantation development plans. This saves time and money in development planning and applications process. Regional level planning also provides opportunities for collaboration between the private sector and government in addressing shared risks associated with disaster vulnerability linked to the impacts of climate change, bush fires, flooding and other disasters. At a local level, structures such as Community Property Associations, Fire Protection Associations and Soil Conservation Committees all present opportunities to strengthen natural resource management through the integration of biodiversity considerations.

3.2. Embed biodiversity considerations into national, provincial and municipal development planning and monitoring			
INDICATOR	Completed and approved Spatial development frameworks (SDF's)	TARGET	By 2019, 100% of all SDFs being developed have biodiversity considerations. SDF's reviewed
	Number of plans into which biodiversity considerations have been embedded		Not currently monitored

Activities		Lead	Support	Priority
3.2.1	Integrate biodiversity considerations into the tools being implemented to support environmental decision-making for the Strategic Integrated Projects (SIPs) (i.e., SEAs, norms & standards, EIAs, EMPs, etc.)	DEA	The Presidency, SANBI, provincial environmental departments, provincial conservation authorities, relevant state-owned enterprises together with relevant departments e.g. DWS	High
3.2.2	Integrate biodiversity considerations into land capability and agricultural zoning for Preservation and Development of Agricultural Land Framework Bill and control measures in terms of Conservation of Agricultural Resources Act	DAFF	SANBI, provincial departments	High
3.2.3.	Integrate biodiversity priority areas into integrated coastal management plans and off-shore plans	DEA	SANBI, sector bodies, provincial environment departments (coastal); DAFF (fisheries); municipalities (coastal)	High
3.2.4	Develop and publish guidelines for invasive species monitoring, control and eradication plans and review these guidelines every five years	DEA, SANBI	Municipalities, provincial environment departments	High
3.2.5	Develop invasive species monitoring, control and eradication plans for protected area management plans, environmental plans for state land, and integrated development plans and review and submit progress on plans every three years	Municipalities and government departments for developing the plans, DEA for implementing the regulations	DEA, SANBI	High
3.2.6	Integrate biodiversity priority areas into spatial development frameworks (SDFs), integrated development plans (IDPs) and land-use schemes (LUS)	Municipalities, DEA	DRDLR, SANBI, municipalities, SALGA, CoGTA	High
3.2.7	Integrate biodiversity priorities into key production sector strategies and plans, including for agriculture, mariculture, aquaculture, mining, forestry, water, land reform and rural development, through cooperative approaches	DEA	DWS, DAFF, DMR, DRDLR, SANBI, provincial environment departments, conservation authorities, NGOs	Med
3.2.8	Integrate biodiversity into the management of natural resources through	NGOs, private	DEA, SANBI, DWS, DAFF, DRDLR, Provincial	Low

	local-level structures such as Fire Protection Associations, Soil Conservation Committees, Water User Associations (WUA), and Communal Property Associations (CPA)	entities, local authorities	departments, Local Authorities, NGOs	

3.3 Strengthen and streamline development authorisations and decision-making

South Africa has made significant progress in mainstreaming biodiversity into environmental authorisations, including Environmental Impact Assessments (EIAs). Biodiversity is increasingly routinely incorporated into environmental authorisations through the EIA process, which is governed by the National Environmental Management Act (NEMA) (Act 107 of 1998) and associated EIA regulations which include lists of biodiversity features that trigger the need for an environmental authorization.

Priorities include the robust implementation of the full mitigation hierarchy, especially using offsets to deal with residual impacts that are not currently dealt with. Priorities yet to be effectively addressed include harmonising regulatory requirements across different regulatory processes for land- and sea-use activities to ensure consistence on biodiversity issues (e.g. setbacks from riparian features), improve compliance and ensure impacts on biodiversity are effectively assessed and taken into consideration (e.g. ensuring timeframe requirements for EIAs accommodates seasonality and scale required for effective biodiversity assessments). This is essential to ensure authorisations and decision-making processes are integrated, efficient and promote sustainable development. This includes identifying areas where certain types of development is prohibited e.g. 'no-go' areas for mining. Engaging with sectors prior to the application for permits or authorisations is also important to ensure consistency and alignment under different regulatory frameworks (links to Outcome 3.6). Strategic Environmental Assessments provide an important means of achieving this. As the system for environmental management is still evolving opportunities need to be sought for improved alignment.

3.3 Strengthen and streamline development authorisations and decision-making			
INDICATOR	% of environmental impact assessment applications processed within timeframes, reported quarterly from the National Environmental Assessment System	TARGET	By 2019, 98%
	Number of environmentally significant areas identified and published for restriction for mining activities		By 2016, 1 environmentally significant area identified, negotiated and published through NEMA
	Number of regulatory interventions developed and implemented to streamline the environmental authorisation process for SIP projects		By 2019, 8 regulatory interventions

Activities	Lead	Support	Priority

3.3.1	Harmonise the regulatory requirements across different regulatory processes for land- and sea-use activities to ensure consistence on biodiversity issues and improve compliance	DEA, DAFF, DMR, DWA, DRDLR	Provinces, Municipalities, SANBI, COGTA, SALGA, FSA , ARC, CSIR	High
3.3.2	Ensure regulatory requirements enable the impacts on biodiversity to be effectively assessed	DEA, provincial environment departments	Provincial conservation authorities; SANBI	Low
3.3.3	Identify areas of high sensitivity where certain types of development is prohibited, e.g. 'no go' areas for mining	DEA, provincial environment departments, DMR	SANBI, NGOs, sector bodies	High

3.4 Compliance with authorisations and permits is monitored and enforced

There have been important achievements in environmental compliance and enforcement, including the integration of units dealing with 'green, blue and brown' compliance and enforcement issues into an integrated team. There have also been increases in the number of environmental management inspectors, the effectiveness of compliance and enforcement activities (e.g. the finalisation of criminal investigation dockets), and in the number of directives and compliance notices issued. However, in its National Environmental Compliance and Enforcement Report for 2013/14 DEA notes ongoing concern with the high incidence of illegal activities related to biodiversity and environmental impact assessment requirements.

DEA has recently developed a Compliance and Enforcement Strategy for the Environmental Management Inspectorate (EMI) which aims to ensure that compliance and enforcement interventions are properly coordinated and effective. The effective implementation, maintenance and monitoring of this strategy is a major priority for the sector going forward. In its 2019 Strategic Plan, DEA has also prioritized strengthening the work of the EMI, including an annual increase in the number of inspections conducted each year from 135 in 2014/15, resulting in the inspection of over 750 facilities with environmental authorisations by 2019. DEA has also prioritized the training of environmental management inspectors with a target of 1060 EMIs receiving training over the next five years by 2019.

An achievement over the last 10 years has been greater coordination through the Permitting and Enforcement Planning Committee and a Standard Operating Procedure with South African Police Service around enforcement linked to environmental crime.

3.4 Compliance with authorisations and permits is monitored and enforced			
IND	Number of compliance inspections conducted	TA	By 2019, 14500 compliance inspections conducted

	Number of enforcement actions undertaken for non-compliance with environmental legislation		By 2019, 1500 completed criminal investigations handed to the NPA for prosecution (for EMI Institutions) and 3100 administrative enforcement notices issued for non-compliance with environmental legislation

Activities		Lead	Support	Priority
3.4.1	Strengthen the environmental regulatory and compliance frameworks to support the successful implementation of biodiversity management and conservation interventions by the private sector	DEA	Provincial departments and conservation authorities, permitting and enforcement, planning committee, MINTECH WGs	High
3.4.2	Implement, maintain, monitor and improve the Environmental Compliance and Enforcement Strategy	DEA and DAFF	DWS, DMR, SAPS,SSA, Provincial environmental departments and conservation authorities, municipalities, customs, Interpol	High
3.4.3	Improved number, capacity and budget for Environmental Management Inspectors to enforce conditions of authorisation and to respond to environmental crimes	DEA,DAFF, provincial environmental departments and conservation authorities	Municipalities	High
3.4.4	Improve the enforcement of trade regulations	DEA	SAPS, SANBI, DAFF, DIRCO, Customs, SANDF, provincial environmental departments, Postal Services, BCOCC, SARS, DTI, NGOs	High
3.4.5	Improved compliance of recreational activities with permits in coastal, marine and other ecosystems	DEA, DWS, DAFF	Provincial environmental departments and conservation authorities, SANBI, SANParks and Municipalities.	High
3.4.6	Reduce invasions through interventions at ports of entry and coordinated species management programmes	DEA	SAPS, SANBI, DAFF , DIRCO, Customs, SANDF, provincial environmental departments, Postal Services, BCOCC, SARS, DTI, NGOs	High
3.4.7	Implement effective waste management and aerosol, marine and aquatic pollution control measures, with particular emphasis on aquatic ecosystems in biodiversity priority areas	DEA,DWS	DAFF, provincial environmental departments, NGOs, SAMSA and municipalities	High

3.5 Appropriate allocation of resources in key sectors and spheres of government facilitates effective management of biodiversity, especially in biodiversity priority areas

While progress has been made in growing and diversifying sources of finance for biodiversity management, South Africa's Fifth National Report to the CBD cites limited financial resources (e.g. for protected area management) as one of the ongoing challenges for the biodiversity sector. Opportunities to mobilise additional resources for biodiversity management fall into two broad categories: (i) increasing funding available for biodiversity through the fiscus as well as non-state resources, and (ii) strengthening the framework of economic instruments that support biodiversity management. Examples of economic instruments and other sustainable finance schemes include: creating incentives that encourage investments by the private sector such as green bonds, payments for ecosystem services, and tax incentives; and full cost accounting of natural resources such as water.

An important global initiative targeted at addressing this issue is the UNDP's Biodiversity Finance Initiative (BIOFIN) which is managed by the United Nations Development Programme (UNDP), in partnership with the European Commission and the Governments of Germany and Switzerland. Currently, 29 countries are participating in BIOFIN, including South Africa, where BIOFIN is being implemented by DEA in collaboration with the National Treasury. BIOFIN aims to develop a comprehensive national resource mobilizing strategy, improve cost effectiveness through the mainstreaming of biodiversity into national development and sectoral planning, and develop a methodology for quantifying the biodiversity finance gap at national level. The project will pilot a new approach and methodology for leveraging increased biodiversity investment at the national level. Implementing the BIOFIN project in South Africa is important to the implementation of the NBSAP.

Other priorities include integrating biodiversity considerations into national, provincial and municipal budgets through intergovernmental structures, strengthening economic incentives (including removing perverse incentives) for biodiversity management, and streamlining environment sector functions and responsibilities at national and provincial level, with appropriate monitoring and enforcement, to ensure equitable allocation of resources for biodiversity against budgeted priorities.

3.5 Appropriate allocation of resources in key sectors and spheres of government facilitates effective management of biodiversity, especially in biodiversity priority areas			
INDICATOR	Number of sector policies and/or institutional structures adjusted to facilitate the sustainable flow of resources into the biodiversity sector	TARGET	By 2024, 3 sector policies or institutional structures adjusted

Activities		Lead	Support	Priority
3.5.1	Update the review of funded programmes under the environment portfolio in the public	National	DWS, DAFF, SANBI, SANParks	High

	sector	Treasury, DEA		
3.5.2	Develop a resource mobilisation strategy for biodiversity, initially supported by the implementation of the UNDP/DEA BIOFIN project	DEA, National Treasury	SANBI, SANParks, Provincial conservation authorities and Departments	High
3.5.3	Coordinate the integration of biodiversity considerations into the budgeting process of national, provincial and municipal budgets through intergovernmental structures	DEA	Provinces, SANBI, SANParks, SALGA, municipalities, DAFF, DWS, DRDLR, DMR, DoE, National and Provincial Treasuries.	High
3.5.4	Review and develop innovative financial instruments beyond the fiscus to increase the pool of resources available for biodiversity	DEA	NGOs, international donors, Private sector	Med
3.5.5	Review and amend natural resource pricing to leverage finance for biodiversity management and conservation, such as the water pricing strategy	Department responsible is dependent on pricing strategy	DWS, DEA, DAFF, SANBI, SALGA, municipalities, provinces, National Treasury, private sector	High
3.5.6	Develop and strengthen economic incentives to encourage appropriate investment by the private sector in biodiversity management and conservation, such as tax incentives, conservation agriculture incentives to farmers and others	DEA	SANBI, National Treasury, private sector	Med
3.5.7	Review and remove perverse incentives that negatively impact biodiversity management and conservation, such as those related to municipal property rates	DEA	SANBI, National Treasury, SALGA, municipalities, provinces, private sector, entities	Med
3.5.8	Ensure biodiversity functions get an equitable allocation of budget by streamlining environment sector functions and responsibilities at national and provincial level, and developing appropriate monitoring and enforcement	DEA, national and provincial treasury	National and provincial departments	Med

3.6 Biodiversity considerations are integrated into the development and implementation of policy, legislative and other tools

Mainstreaming biodiversity objectives into the policies, strategies and practices of other sectors has been a major focus of the NBSAP 2005 with clear priorities, highlighted in the Fifth National Report to the CBD, to take this work forward. Foundations for mainstreaming are laid with the use of integrated science-based biodiversity tools that inform the development of policies and legislation. South Africa has a well-developed biodiversity policy and legislative environment that is firmly integrated into the science-policy interface (link to Outcome 6.4). Key achievements are listed in the Fifth National Report to the CBD and extend across the breadth of the management and protection of species and ecosystems, and include progress in integrating biodiversity considerations into relevant policies of other sectors, such as the National Water Resource Strategy. These gains are enabling but the implementation,

maintenance and monitoring of these measures is required to ensure the long term persistence of biodiversity. Review and updating existing legislation, policy and tools is often necessary. For instance, a priority for the next 10 years is the review of effectiveness of measures, such as BMP-S and recovery plans for prioritized species (especially marine living resources), and regulations that deal with the management and protection of species (including damage causing animals) and the activities that impact on species.

Activities prioritized for the current NBSAP include relevant amendments, revisions and updates to the biodiversity sector's own legislation, including the revision of the Biodiversity Act, finalization of the revision of the Conservation of Agricultural Resources Act, 1983 (Act No. 43 of 1983), the development of a robust policy framework for biodiversity offsets to ensure that offsets can be efficiently implemented, the development of legislation that would provide for legal protection of critically endangered species occurring at single sites, updating South Africa's access and benefit sharing legislation and the approval of the Biological Invasions Strategy.

Also prioritised is the integration of biodiversity considerations into the policies, legislation, guidelines and codes of conduct of other sectors including land use planning, agriculture, climate change, waste management, renewable and non-renewable energy, genetically modified organisations, invasive species and land degradation. At an international level, South Africa has ratified numerous multilateral environmental agreements (MEAs) which require ongoing national implementation and global engagement.

3.6 Biodiversity considerations are integrated into the development and implementation of policy, legislative and other tools			
INDICATOR	Number of legislative tools to ensure the protection of species and ecosystems developed and implemented	TARGET	By 2019, 20 legislative tools
	Number of country positions for multilateral agreements approved		By 2019, 22 biodiversity-related country positions for multilateral agreements approved

Activities		Lead	Support	Priority
3.6.1	Develop, implement, review and update legislative and other tools that ensure the protection of species and ecosystems, such as the Biodiversity Act and its amendments as well as the norms and standards, regulations, and guidelines published and implemented in terms of the Biodiversity Act, the Protected Areas Act, the Marine Living Resources Act, the Integrated Coastal Management Act, a policy framework on biodiversity offsets, and legislation in regulating activities relating to emerging technologies	DEA	DAFF, DWS, DST, Provinces, conservation authorities, NGOs, private sector, civil society	High
3.6.2	Integrate the value of biodiversity into national accounting and reporting systems	SANBI	DEA, StatsSA, National Treasury, private sector	High

3.6.3	Integrate biodiversity considerations into sector policies and legislation, including land use planning (SPLUMA) and decision making tools for agriculture (includes PDALFA, Sustainable Use and Management of Natural Resources Policy and Bill, revision of CARA), climate change, waste management, renewable and non-renewable energy, invasive alien species and land degradation.	DEA	DAFF, DWS, DST, DRDLR, Public entities, provincial environment departments and conservation authorities, NGOs, private sector, civil society	High
3.6.4	Integrate biodiversity considerations into production sector codes of conduct and best practice guidelines	DEA, SANBI, NGOs	DAFF, DMR, DoE, ARC, DWS, SANBI, Research Institutions, sector bodies, NGOs	Med
3.6.5	Proactively engage with the international community to influence regional, subregional and multilateral environmental agreements and ensure alignment of domestic legislation, implementation and strengthen monitoring and evaluation.	DEA, DIRCO	Everyone	High
3.6.6	Ratify the Nagoya–Kuala Lumpur Supplementary Protocol on Liability and Redress to the Cartagena Protocol on Biosafety	DEA, DAFF	Key departments (DST, DIRCO, the DTI, DOJ&CD)	High
3.6.7	Ensure that Ecosystem-based adaptation (EbA) is reflected in South Africa's National Adaptation Plan (NAP)	DEA	SANBI	Med

SO 4. People are mobilised to adopt practices that sustain the long-term benefits of biodiversity.

Biodiversity is not widely understood by the general public and as a result the economic, social and environmental importance of biodiversity assets and ecological infrastructure is often poorly recognised. While a better awareness and understanding of the environmental, cultural, economic and intrinsic values of biodiversity is important in building motivation for action, individuals also need to be aware of the actions they can take to conserve and sustainably use biodiversity. Different segments of society can take different actions depending on the types of activities they have control and influence over. Strategic objective 3 addresses mainstreaming biodiversity into production sectors and government, thereby influencing policies, plans and practices. This strategic objective focuses on mobilising people in the general public to adopt practices that sustain the long term benefits of biodiversity.

People need to be mobilised to adopt practices that enable them to both benefit optimally from biodiversity assets and ecological infrastructure and to address the direct and underlying drivers of biodiversity loss that pose multiple risks to society. This strategic objective therefore seeks to enhance people's awareness, understanding and appreciation of the diverse values of biodiversity through more effective coordination and messaging by the biodiversity sector (Outcome 4.1) and to mobilise people take actions and make choices that support the conservation and sustainable use of biodiversity (Outcome 4.2).

4.1 People's awareness of the value of biodiversity is enhanced through more effective coordination and messaging

The lack of an aligned and coordinated approach to the awareness raising and communications work emanating from the biodiversity sector has resulted in messaging that is sometimes contradictory and confusing. The link between economic development and biodiversity is not well understood, and biodiversity is commonly seen as being in competition with socio-economic imperatives. In 2010, the Making the Case for Biodiversity project helped to develop a more inspiring approach to the messaging and communications of the sector. The Fifth National Report to the CBD cites as a priority the need to bring the biodiversity sector as a whole along with this shift in messaging. Organisations and individuals in the sector still revert to "doom and gloom" messaging which tends to elicit apathy rather than action in the target audience. The development and implementation of a properly funded national biodiversity communications, education and awareness strategy is a critical priority towards addressing this challenge (links to Outcome 6.5). South Africa has a number of successful citizen science programmes that have gone a long way to both harnessing knowledge and deepening environmental literacy in the public arena. Strengthening the work of these programmes is a priority. Similarly, solid progress has been made in including relevant biodiversity (including climate change adaptation education) content into school curricula. Taking this forward requires improving the understanding of educators of this content, as well as developing and improving methodologies for teaching.

4.1 People's awareness of the value of biodiversity is enhanced through more effective coordination and messaging			
INDICATOR	National strategy, implementation plan and monitoring framework developed, funded and implemented	TARGET	By 2025, increased awareness is seen against results of monitoring framework

Activities		Lead	Support	Priority
4.1.1	Develop & fund a coordinated national biodiversity communications, education and awareness strategy, implementation plan and monitoring framework	DEA	SANBI, NGOs, tertiary and research institutes	High
4.1.2	Implement the national biodiversity communications, education and awareness strategy, implementation plan and monitoring framework	DEA	SANBI, NGOs, tertiary and research institutes, media	High
4.1.3	Strengthen environmental literacy through citizen science programmes that promote learning and common knowledge about biodiversity	SANBI	DST, Botanical Society, NGOs, UCT's ADU, museums	Med
4.1.4	Strengthen the integration and teaching of biodiversity content in relevant school curricula	SANBI (current), Provincial Education Departments (proposed)	SANBI, DBE, tertiary and research institutes, DHET	Med

4.2 People are mobilised to conserve and sustainably use biodiversity

Building on enhanced awareness of the value of biodiversity, efforts are needed to move people towards more biodiversity-friendly actions. Much work has been done to integrate biodiversity into the production of consumer goods and services including fish, red meat, wine and tourism, amongst others. With a range of biodiversity-friendly options available, consumers need to be aware of these choices in the marketplace and encouraged to make more biodiversity-friendly choices about where they vacation, what food they eat, wine they drink and companies they support. Tourism in South Africa is underpinned by biodiversity assets and is one of the fastest growing sectors of the South African and global economy, contributing billions of Rands to the economy and creating thousands of jobs. Opportunities exist to profile the importance of biodiversity in South Africa's tourism economy. Biodiversity criteria have been successfully integrated into the production and marketing of wine and fish; deeper consumer support for these and other products will increase the value and sustainable use of biodiversity.

4.2 People are mobilised to conserve and sustainably use biodiversity			
INDICATOR	Increased consumption of biodiversity-friendly products	TARGET	Currently not monitored

Activities		Lead	Support	Priority
4.2.1	Promote awareness of biodiversity-friendly consumer choices, including in retail and tourism	Current: NGOs, consultants, media, private sector	Government	Low
4.2.2	Expand the incentives available to encourage voluntary behaviour change towards more biodiversity-friendly choices	Private sector, DEA	Sector body producer organisations, DTI, DAFF, DEA, parastatals, Treasury, DOT	Med
4.2.3	Create awareness around environmental rights and appropriate tools that protect those rights	Current: NGOs, province, local government. Requires provincial department lead (with acknowledgement that some aspects require independence of government structures).	NGOs and provincial, local government (current), Chapter 9 institutions (SAHRC etc.)	High

SO 5. Conservation and management of biodiversity is improved through the development of an equitable and suitably skilled workforce.

Harnessing the benefits of South Africa's biodiversity assets and ecological infrastructure requires an equitable and skilled workforce of biodiversity professionals and technicians to implement the sector's expanding and increasingly complex mandate. This requires both the strengthening and transformation of all organisations involved in biodiversity conservation, research and management. Conservation agencies, research institutes, government departments, private companies and not-for-profits with a biodiversity mandate all need capable and qualified managers, conservators or researchers, and to help increase the number of black South Africans in leadership positions for these functions[12].

Recognizing this challenge, the NBSAP 2005 and the National Biodiversity Framework identified the need for a strategic and comprehensive initiative to strengthen and diversify the human capital of the biodiversity sector. This resulted in the Human Capital Development Strategy (HCDS) for the Biodiversity Sector (referred to as the BHCDS), which aims to expand, transform and equip the biodiversity sector workforce with the relevant and quality higher-level biodiversity skills required to meet the needs of the sector's mandate. The BHCDS led to the establishment of GreenMatter, a partnership initiative of SANBI and the Lewis Foundation that drives transformation in graduate level skills for biodiversity.

This strategic objective seeks to build on the work done to date through the BHCDS by ensuring the enabling conditions for the growth and transformation of the capacity in the sector are in place (Outcome 5.1), the needs of the biodiversity sector are incorporated into skills development and planning (Outcome 5.2), and institutions are capacitated to deliver on their mandates (Outcome 5.3).

5.1 Macro-level conditions enabled for skills planning, development and evaluation of the sector as a whole

The transformation and growth of relevant, high quality skills in the biodiversity sector requires coordination of existing capacity building efforts and resources, as well the targeted investment of additional resources required for human capital development. Significant progress has been made with the development and implementation of the BHCDS and the establishment of GreenMatter, a partnership initiative of SANBI and the Lewis Foundation that drives transformation in graduate level skills for biodiversity with support from a network of other partners. GreenMatter is largely donor-funded, which is not sustainable and national level coordination is required to help identify and address blockages preventing the effectiveness of HCD initiatives. Priorities for the NBSAP include the ongoing implementation of the BHCDS, the development of an effective and sustainably funded national level coordinating mechanism for capacity development, and the development of improved mechanisms to effectively evaluate HCD initiatives.

[12] SANBI and the Lewis Foundation, 2010. A Human Capital Development Strategy for the Biodiversity Sector, 2010 – 2030.

5.1 Macro-level conditions enabled for skills planning, development and evaluation of the sector as a whole			
INDICATOR	An effective national mechanism is in place and capacitated to coordinate national HCD strategies and priorities	TARGET	By 2016, cross-partner mechanism in place
	A monitoring and evaluation programme is in place		By 2017, M&E framework and evaluation initiated
	The BHCDS programme of implementation is funded		By 2020, funding support to increase from an average of 2% per annum to at least 30%

Activities		Lead	Support	Priority
5.1.1	Incorporate the Human Capital Development needs of the biodiversity sector into national skills development systems (e.g. NSDS, DHET and SETAs)	DEA	SANBI	High
5.1.2	Develop an effective national mechanism for coordinating biodiversity and other green skills capacity development planning, initiatives and skills intelligence, within the sector and sectors impacting on biodiversity management.	DEA (through NESPF)	SANBI, NESPF, DST, DWS, DBSA, DPME	High
5.1.3	Develop and/or integrate existing mechanisms for the monitoring and evaluation of BHCD initiatives	DEA (through NESPF)	SANBI, NESP, DST, DWS, DBSA, DPME	High
5.1.4	Ensure that national strategies receive adequate funding support	DEA	Treasury, DST, Provinces,	High

5.2 An improved skills development system incorporates the needs of the biodiversity sector

One of the key challenges that the BHCDS has identified is the fact that the biodiversity sector does not participate in national planning for skills provisioning. There is a misalignment between biodiversity needs and higher education systems and between university curricula and emerging biodiversity needs. Experiential learning and work-integrated learning opportunities currently funded by the state are not supporting biodiversity priorities and people are under-qualified, lack experiential learning and work integrated learning opportunities and are therefore unable to enter the workplace. Further, the majority of students studying to enter the sector are not from previously disadvantaged groups resulting in low levels of transformation, and no one is providing graduates with holistic development and employability skills to enter the workplace – a gap the GreenMatter Fellowship is trying to address. The sector also lacks a dedicated facility to drive knowledge generation for biodiversity in South Africa. Priorities identified in the GroenSebenza Pioneer youth survey included the need for entry level job opportunities in the sector for youth, and for youth to be more involved in and empowered to contribute towards biodiversity management through on the job training. Access to education in rural areas was identified as another priority.

The priorities for the NBSAP are therefore to improve the quality and relevance of skills produced for biodiversity, to increase the number of talented black South Africans entering the sector and to nurture a high end skills pipeline for biodiversity in South Africa through bursaries, Centres of Excellence focusing on

research excellence on biodiversity issues, and Research Chairs supporting capacity development for biodiversity management.

5.2 An improved skills development system incorporates the needs of the biodiversity sector			
INDICATOR	Representation and framing of biodiversity occupations has taken place with DHET Increased percentage transformation in the biodiversity sector	TARGET	By 2020, 23 priority occupations identified in the BHCDS included in the Organising Framework for Occupations (OFO) By 2020, 74% of specialists, monitors, technicians including Government supply chain and partner organisations are from previously disadvantaged groups
	Multi and trans-disciplinary curricula in place within higher education institutions		By 2025, at least 40% of universities and university of technologies incorporate biodiversity, natural resource/social science multi and trans-disciplinary curricula into academic programmes
	A national biodiversity career guidance initiative is in place to attract black youth into relevant study and career paths		By 2020, all SA HEIs have incorporated biodiversity career guidance into student support

Activities		Lead	Support	Priority
5.2.1	Develop and implement an updated Biodiversity Human Capital Development Plan in support of the BHCD Strategy	DEA, SANBI	NESPF	High
5.2.2	Improve the quality and relevance of skills produced for biodiversity conservation and management	DEA through NESPF	DST, universities & universities of technology, CATHSSETAs, EWSETA, All training providers	High
5.2.3	Increase the number of black, talented South Africans attracted to the sector, based on the BHCDS	DEA, SANBI	All sector players	Med
5.2.4	Nurture a high end skills pipeline for biodiversity in SA, including bursaries, Centres of Excellence and research chairs	NRF	SANBI, NRF, DHET, TEIs	High

5.3 Partnerships are developed and institutions are capacitated to deliver on their mandates towards improved service delivery

High vacancy rates plague institutions responsible for biodiversity management in South Africa. The BHCDS cites an average vacancy rate of 22% in public biodiversity agencies, increasing to 37% among nature conservation professionals, 41% in other nature and oceanographic occupations, and 51% in nature conservation technicians. 30% of people working in biodiversity agencies, organisations and institutions are not qualified to take on their allocated responsibilities. There have also been huge fluctuations among managers and professional staff, some of which can be attributed to moving from organisation to organisation within the biodiversity sector due largely to employment conditions. These conditions highlight a priority for the NBSAP to

improve retention and effective deployment of suitable individuals in the sector. It also highlights a priority to influence and improve the capacity that exists in the biodiversity sector and other sectors to improve service delivery and support effective biodiversity management. This is about key partners and government departments having the capacity to implement the legislation and their mandates in terms of NEMA.

Institutional absorption capacity also hinders the opportunity to create jobs by significantly growing labour intensive programmes of work to align with the needs and opportunities in the natural resource management. This is a nascent opportunity to build on the successes of the existing natural resource management job creation programmes and contribute towards the imperatives of the green economy. A priority for the NBSAP are therefore to grow the institutional absorption capacity to implement labour intensive programmes of work in the sector.

Given the multi-jurisdictional/cross-boundary nature of biodiversity, strengthening institutional capacity for effective coordination and cooperation with other departments, institutions, sectors, and countries is another area of priority for the NBSAP.

5.3 Partnerships are developed and institutions are capacitated to deliver on their mandates towards improved service delivery			
INDICATOR	Decreased vacancies in provincial and local government institutions	TARGET	Reduction in vacancies in prioritised specialist professional occupations
	Decreased turnover of key positions in provincial and local government institutions		Decrease in turnover
	Key positions in DEA and key departments (national, provincial, local) are identified and capacitated to give effect to biodiversity mandates		Mentoring, career pathing and succession planning in place for leadership positions that are critical to the corporate vision and strategy

Activities		Lead	Support	Priority
5.3.1	Improve the retention and effective deployment of suitable individuals in the sector	Every organisation	DEA through NESPF	Low
5.3.2	Build institutional capacity to implement scaled up labour intensive programmes of work in the sector	DEA	SANBI, NGOs, municipalities, CBOs, WUAs, conservation authorities, private sector	Med
5.3.3	Improve institutional cooperation and coordination at the operational level, including for cross-boundary management of biodiversity assets	DEA	Provincial and local government, NGOs	Med
5.3.4	Influence and improve the capacity of key partners/departments across all sectors to improve service delivery and support effective biodiversity management, including improved understanding of mandates, rights and relevant legislation	DEA	DAFF, DWS, DMR, DRDLR, DED, DST, local government	High

SO 6. Effective knowledge foundations, including indigenous knowledge and citizen science, support management, conservation and sustainable use of biodiversity

Strong knowledge foundations underpin effective management, conservation and sustainable use of biodiversity, which supports delivery of services and benefits to society. This is therefore an enabling strategic objective that is fundamental to the achievement of all other strategic objectives (see Figure 12).

Effective knowledge foundations are built on foundational datasets on species and ecosystems (Outcome 6.1), regular monitoring and assessments of biodiversity (Outcome 6.2), the identification of geographic priority areas for the management, conservation and restoration of biodiversity assets and ecological infrastructure (Outcome 6.3), and research and analysis that is management- and policy-relevant (Outcome 6.4). Finally, it is important that the knowledge base is accessible and presented in a way that improves the leverage of biodiversity data and informs decision-making (Outcome 6.5).

6.1 Relevant foundational data sets on species and ecosystems are in place and well coordinated

Foundational information on South Africa's biodiversity underpins effective biodiversity management and conservation required by the NBSAP. It enables management of biodiversity assets, investment in ecological infrastructure, and mainstreaming of biodiversity into planning, policies and practices of different spheres of government and sectors, informs effective communication, education, and public awareness, facilitates monitoring and evaluation of biodiversity targets, and supports research objectives.

South Africa has relatively good foundational datasets on species and ecosystems that have been developed over decades. The development of these datasets has benefitted significantly from contributions of civil society and non-governmental organisations, for instance citizen science survey projects such as atlas projects for birds, reptiles, frogs, butterflies, proteas and spiders. Citizen scientists and NGOs will continue to play a crucial role in maintaining and updating datasets, particularly related to the distribution data on species, which is an extensive and demanding task. National parks can also play important role in supporting the provision of high resolution data to facilitate refinement of national data layers used in biodiversity assessments. Citizen scientists contribute in significant ways to collecting biodiversity data. There remain however gaps in foundational data that need to be filled in order to inform research, policy, management and conservation of ecosystems and species. Examples of priority gaps include, but are not limited to, gaps related to medicinal plants, undertaking surveys in under-sampled areas, and inventory lists of invasive alien species in World Heritage Sites, protected areas or Ramsar sites. Capturing and safeguarding indigenous knowledge linked to biodiversity is also an important priority in the future, along with the development and maintenance of long-term large-scale datasets that can inform research and policy.

6.1 Relevant foundational data sets on species and ecosystems are in place and well coordinated			
IND	Foundational data co-ordination / management system developed,	TA	Co-ordinating system established for foundational data sets

	implemented and maintained	
	Report on priority gaps in foundational data sets for species	By 2017, gaps identified
	Number of quality controlled records added to spatial data for species - newly collected data, and existing records captured and added to data set and that address priority gaps	200,000 records added to spatial data sets (newly collected); 1 million existing records added to data set.
	Number of species for which information has been compiled, including indigenous knowledge where relevant (medicinal and used plants)	By 2025, information for a total of 40 000 species is compiled
	Number of environments for which ecosystem classification systems finalised	By 2017, classifications for four environments completed
	Number of national maps showing distribution of ecosystems	By 2020. four national maps
	Number of institutions contributing data (data / information sharing agreements)	By 2025, 70% of major data holders sharing data
	Long term data sets identified, maintained and continued	By 2020, long term data sets available, and programme for ongoing data collection implemented
	Number of provinces with functional National Recordal System in place	By 2016, a functional NRS is in place in 7 provinces

Activities		Lead	Support	Priority
6.1.1	Design, establish and maintain accessible biodiversity data system / network that links data sets from various institutions (including academic and citizen science projects) for indigenous and invasive alien species, including occurrence records and coordinated information on species	SANBI	SANParks, DST/NRF/Councils, Museums, provincial authorities	High
6.1.2	Assess priority gaps in existing foundational data sets for indigenous species and relevant invasive alien species to enable decision-making	SANBI	CSIR, research institutions	Med
6.1.3	Address priority gaps in foundational data for indigenous species and relevant invasive alien species, including documenting the distribution and abundance of priority groups (surveys / inventories) and mobilizing data from specimens in collections	SANBI	All relevant institutions, NGOS,	Med
6.1.4	Compile consolidated species information, such as identification, biology, distribution, status, use / value to people, taxonomy, legislation, and other literature	SANBI	Researchers, NGOs	Med
6.1.5	Maintain and formalise the National Ecosystem Classification System	SANBI	CSIR, WRC, conservation authorities	High
6.1.6	Map national ecosystem types in terrestrial, freshwater and marine environments	SANBI / CSIR	Provincial authorities	High
6.1.7	Capture and safeguard indigenous knowledge linked to biodiversity through the National Recordal System	DST	SANBI, researchers, citizen science; UJ Chair for medicinal plants	Med
6.1.8	Identify, develop and build further on relevant long-term large-scale monitoring projects	SANBI, SAEON	provincial authorities, ADU at UCT	High

	and data sets			

6.2 The status of species and ecosystems is regularly monitored and assessed

Regular monitoring and evaluation of biodiversity status and trends is essential to informed decision making in environmental planning and management. Together with research it is essential to addressing gaps in our knowledge, evaluating the effectiveness of interventions, and the generation of new knowledge and information. It is the mandate of the South African National Biodiversity Institute, in terms of the Biodiversity Act to monitor and report regularly on the state of biodiversity. A national system for monitoring the status and trends of target species and for monitoring ecosystem health is being designed and it is critical that it be implemented effectively. South Africa already reports on the state of biodiversity, in the National Biodiversity Assessment (NBA), and this must be revised and updated at least every seven years. The NBA provides the broad framework for reporting on species and ecosystems monitored and assessed and includes amongst others, key indicators of species and ecosystem status (threatened and protected). Maintenance of an updated classification of species and ecosystems is an essential foundation for monitoring and assessment of biodiversity, as is the monitoring and mapping of activities that put pressure on biodiversity, including in marine ecosystems where these are often not directly visible (e.g. impacts on fishing).

Citizen science monitoring projects make an important contribution to monitoring efforts and these initiatives should be supported in order to harness citizen science collaboration and optimize the contribution they make to national monitoring efforts and biodiversity

6.2 The status of species and ecosystems is regularly monitored and assessed			
INDICATOR	National Biodiversity Assessment updated	TARGET	Updated every seven years

Activities		Lead	Support	Priority
6.2.1	Review and expand Red Lists for priority taxa and assess all new species and species in areas targeted for development	SANBI	NGOs, researchers at various institutions	High
6.2.2	Review lists for IAS, TOPS, CITES every five years, based on new data	SANBI / DEA	Provincial authorities, researchers	Med
6.2.3	Develop and implement methods and approaches for assessing the status of ecological infrastructure	SANBI	Researchers, DWS, DEA, CSIR	High
6.2.4	Identify, expand and monitor citizen science contributions to the status of species and	SANBI	DEA, NGOs, citizen scientists, ADU	High

	ecosystems, ensuring appropriate data quality			
6.2.5	Regularly map key pressures on biodiversity, including landcover change, pressures in the marine environments, such as fisheries, trawling, mining, and the density and distribution of invasive alien species	SANBI	DEA	High
6.2.6	Monitor and report on the state of ecosystems and species, including the status and trends for priority harvested marine resources, impact of trade in wildlife and wild plants on biodiversity including change in status in TOPS and CITES listed species, invasive alien species, their impacts and the effectiveness of control measures, change in status of Red Listed species, the impacts of Genetically Modified Organisms on biodiversity assets and ecological infrastructure, and the impacts of climate change on species and ecosystem	SANBI	DEA, DAFF, CSIR, research institutions	High
6.2.7	Revise and update the National Biodiversity Assessment at least every seven years	SANBI	DEA, CSIR	High

6.3 Geographic priority areas for the management, conservation and restoration of biodiversity assets and ecological infrastructure are identified based on best available science

South Africa has well-established track-record and capacity for identifying geographic priority areas through highly developed spatial biodiversity planning methods and techniques that are at the forefront of international practice. These areas are identified based on best available science and relate directly to policy and legislative tools in South Africa. The maps and accompanying data of these geographic areas provide fundamental information necessary for effective planning and decision-making in the biodiversity sector and beyond. Importantly, they help to focus the limited resources available for conserving and managing biodiversity in areas that will make the most difference, and can inform planning and decision-making in a range of sectors, especially those that impact directly on biodiversity.

The identification of geographic priority areas for the management, conservation and restoration of biodiversity assets and ecological infrastructure based on best available science remains a priority. This requires necessitates setting appropriate quantitative biodiversity targets for biodiversity features and mapping ecological and socio-economic features that should inform spatial prioritization (such as important ecological infrastructure, Important Bird and Biodiversity Areas, or areas that are important to climate change resilience). An important priority for the NBSAP is ensuring that spatial biodiversity plans are regularly updated as knowledge is strengthened.

6.3 Geographic priority areas for the management, conservation and restoration of biodiversity assets and ecological infrastructure are identified based on best available science

INDICATOR	Spatial biodiversity plans (provincial, biodiversity sector plans, bioregional plans) are updated at least every five to ten years	TARGET	By 2025, updates take place at least every five to ten years

Activities		Lead	Support	Priority
6.3.1	Set quantitative biodiversity targets for all national ecosystem types and for threatened, endemic, indicator, flagship and high-value useful species	SANBI	DEA, CSIR, provincial environment departments, provincial conservation authorities, academic institutions	High for gaps
6.3.2	Map species, ecological and socio-economic features that should inform spatial prioritisation, such as areas that are important for ecological infrastructure, ecosystem-based adaptation or climate change resilience, and areas where demand for ecosystem services is high.	SANBI, DEA	CSIR, provincial authorities, local authorities	High
6.3.3	Update the fruit salad map, provincial biodiversity plans, biodiversity sector plans and bioregional plans regularly, ideally at least every five to ten years	Provincial environment departments, provincial conservation authorities, municipalities	SANBI	High for gaps
6.3.4	Identify priority areas for ecological infrastructure and other national biodiversity priority areas, such as national coastal biodiversity priority areas and updates of freshwater ecosystem priority areas	SANBI	DEA and conservation authorities as appropriate	High

6.4 Management-relevant and policy-relevant research and analysis is undertaken through collaboration between scientists and practitioners

Effective management and conservation of biodiversity must be supported by management and policy-relevant research and analysis. This includes the knowledge, evidence base, tools and models to support planning and management to reduce the loss of biodiversity and maintain ecological infrastructure,

and knowledge about the contribution of biodiversity to sustainable development and human wellbeing. It also provides specific and quantified evidence to make the case for biodiversity at a policy level, guides decision making, and promotes the mainstreaming of biodiversity in key economic sectors with a high impact on biodiversity.

A National Biodiversity Research Development and Evidence Strategy (2015-2025) has been developed to guide research and collaboration that supports research development and evidence generation that addresses emerging needs. This includes: a strong applied focus supporting research that grows knowledge and the evidence base in key areas; the provision of knowledge to support policies for a sustainable future, such as showing the contribution of biodiversity assets (such as protected areas) and ecological infrastructure to food security, health, energy, water provision and job creation; and the provision of a mechanism to assess contested areas of knowledge from different perspectives. Research priorities that emerged through the process of developing the revised NBSAP include research on/into:

- The effectiveness of efforts to manage, conserve and restore biodiversity assets and ecological infrastructure.
- Quantification of the return on investment and an evidence base to improve our predictive power of what the benefits of specific ecological infrastructure interventions will be.
- The impact of current and future threatening processes on biodiversity, and mechanisms for adaptation, management and mitigation for example research to address genetic pollution (e.g. colour variance) linked to requirements of the hunting industry and research on risk assessment s and how they are conducted.
- Research on how to get science into policy – how policies get developed and where to feed evidence into this.
- Indigenous knowledge related to utilization of biodiversity assets.
- Taxonomic revisions of priority genera produced.

Engagement between scientists and practitioners through new and existing national forums, and in international policy development and decision-making platforms is important for ensuring collaboration of efforts towards evidence-based policy and decision-making. These platforms help to ensure that there is an effective feedback loop between outcomes of policies and decisions and knowledge generation. This is critical to support an adaptive management approach to biodiversity management.

Informed decision-making is enabled by decision or policy makers using effective mechanisms through which to access and interpret the relevant knowledge base and by the scientific community better understanding the needs of decision makers in order to provide them with the relevant information. This supports research and analysis that is held to be scientifically credible and sufficiently robust to support effective, appropriate and consistent management, regulation, conservation and protection of biodiversity and the development and implementation of adequate local, national and international policies. The extraction and dissemination of key policy and management-relevant information and messages is another priority.

6.4 Management-relevant and policy-relevant research and analysis is undertaken through collaboration between scientists and practitioners			
INDICATOR	Number of interventions aimed at advancing the biodiversity science policy interface.	TARGET	By 2019, 8 Interventions (6 research programmes developed, Biodiversity Research strategy implemented and monitored and national IPBES hub established and functional
	An updated implementation plan for the National Biodiversity Research Strategy developed and funded		By 2017, the implementation plan has been completed.
	Number of amendments to lists / legislation / management practice made through research outcomes.		By 2016, a tracking system for research impact has been established.

Activities		Lead	Support	Priority
6.4.1	Develop the implementation plan for the National Biodiversity Research Strategy, including carrying out a gap analysis to identify priority research and data needs such as for the NBSAP	SANBI / DEA	DST	Med
6.4.2	Address priority research questions as identified in the National Biodiversity Research Strategy's gap analysis through network of researchers and institutions	SANBI	NRF, DST, SANParks, research councils / institutions	Med
6.4.3	Engage with funding agencies and research community to align funding grants and allocations in support of priority projects	SANBI / DEA	SANBI, DST, NRF	Med
6.4.4	Promote collaboration between practitioners and researchers through existing national forums, such as SAWMA, Fynbos Forum, Arid Zone, SASAqS, KZN Wildlife Symposium, Marine Science, Freshwater Ecosystem Network, Bioprospecting Forum, Biodiversity Planning Forum, WRC symposium, GSSA, Wetlands Indaba, Zoological Society of Southern Africa, South African Wildlife Management Association Symposium, Offshore Environment Forum	SANBI for co-ordination of ensuring outcomes	Various agencies / institutions, DST	Med
6.4.5	Promote engagement in international policy development and decision-making platforms, such as IPBES, IOSEAs, GBIF, to support evidence-based policy and decision-making	DEA	Various agencies / institutions, DST	Low
6.4.6	Establish a process for extracting and disseminating key policy and management relevant information and messages from research, planning and assessment for decision-makers	DEA	SANBI, DST	Med

6.5 Knowledge base is accessible and presented in a way that informs decision-making

Proactively harnessing, organising, refining, synthesizing and managing biodiversity information and knowledge such that it is accessible is essential for supporting policy development and decision-making that integrates biodiversity considerations. Infrastructure or systems that provide for integrated

biodiversity information management are essential to this. A priority for the NBSAP is the development of biodiversity information management systems that facilitate serving various forms of biodiversity information and tools, integrating this information to allow quick and simple access for decision-making, and ensuring alignment with other data portals.

The development of tools that use biodiversity data to provide more responsive analyses for science to policy purposes are also important. These may be tools such as early warning systems and/or predictive scenarios for issues such as climate change, land use impacts, or new and emerging technology (e.g. synthetic biology). This outcome is fundamental to supporting the implementation of the NBSAP, and contributes to the fulfilment of objectives included in the Aichi Targets.

6.5 Knowledge base is accessible and presented in a way that informs decision-making			
INDICATOR	Single portal exists through which all biodiversity information can be accessed	TARGET	By 2016, the single portal is established and it is being populated.

Activities		Lead	Support	Priority
6.5.1	Develop infrastructure that facilitates serving various forms of information and tools in an appropriate format for decision-making to as broad a group of users as possible	SANBI	DEA, DST	High
6.5.2	Develop an integrated information management system for accessing information about species and ecosystems for decision-making	SANBI,	DEA, DST	Med
6.5.3	Ensure alignment between different data portals effectively serve biodiversity information to decision-makers and the public	SANBI	CSIR, DST, DEA, DWS, SAWS, research institutions, SAEON, WRC	Med
6.5.4	Develop tools that uses biodiversity data to provide more responsive analyses for science to policy purposes, such as an early warning system and/or predictive scenarios for issues such as climate change, land use impacts, or new and emerging technology	SANBI	CSIR, DST, DEA, DWS, SAWS, research institutions, SAEON, WRC	Med

Flagship projects

Flagship projects are existing projects that help to make the case for biodiversity, are strategically important for biodiversity and development, and demonstrate how the NBSAP will be implemented.

They are of substantial size in terms of their scientific contribution, number of project partners, running time or financial volume. They may include projects that pilot innovative approaches or interventions, promote foundational research that underpins other strategic objectives of the NBSAP, or help to address major development issues in South Africa.

Flagship projects were identified during the course of the revision of the NBSAP with stakeholder consultation and guidance from the Project Steering Committee. Figure 14 shows how these projects broadly relate to the strategic objectives of the NBSAP.

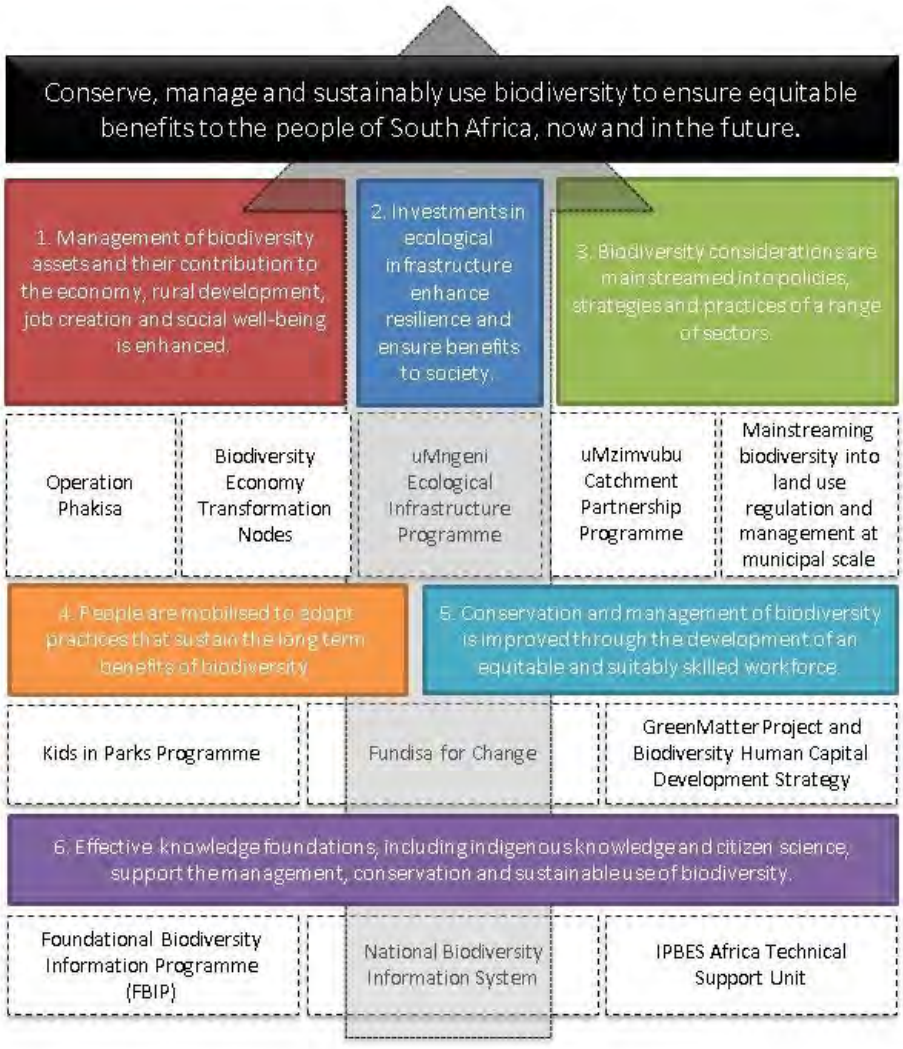

Figure 14. Flagship projects of the NBSAP

Table 3 provides short descriptions of each flagship project. These projects will be tracked and monitored over the next 10 years, contributing to knowledge, development and innovation in biodiversity management and conservation.

Table 3. Flagship projects for the NBSAP

Flagship project	Description
BIOFIN	BIOFIN is a global initiative launched during the 11th Conference of the Parties to the Convention on Biological Diversity in October 2012. It seeks to address the biodiversity finance challenge in a comprehensive manner by defining biodiversity finance needs and gaps through detailed national-level assessments and determining and leveraging challenges and opportunities for resource mobilisation. This Initiative is managed by the United Nations Development Programme (UNDP), in partnership with the European Commission and the Governments of Germany and Switzerland. Currently, 29 countries are participating in BIOFIN, including South Africa. In South Africa, BIOFIN is being implemented by the Department of Environmental Affairs in collaboration with the National Treasury. BIOFIN aims to develop a comprehensive national resource mobilizing strategy, improve cost effectiveness through the mainstreaming of biodiversity into national development and sectoral planning, and develop a methodology for quantifying the biodiversity finance gap at national level. BIOFIN is a funded, existing project that supports the implementation of the NBSAP as a whole. It is of interest in the international arena and the ultimate success of BIOFIN means improved resource mobilisation for achieving the Aichi targets and the revised NBSAP objectives.
Operation Phakisa	Operation Phakisa is an initiative of the South African government designed to fast track the implementation of solutions on critical development issues highlighted in the National Development Plan (NDP) 2030. Operation Phakisa is a results-driven approach to translate plans into concrete results through dedicated delivery and collaboration. It focusses on bringing key stakeholders from the public and private sectors, tertiary and research institutes as well as civil society organisations together to collaborate in detailed problem analysis, priority setting, intervention planning, and delivery. The implementation of the plans are rigorously monitored and reported on, and implementation challenges are actively managed for effective and efficient resolution. Operation Phakisa is initially implemented in two sectors, the ocean economy and health and may grow to include others. The Operation Phakisa in the ocean economy is focused on implementing priority programmes that will unlock the economic potential of South Africa's oceans in a way that helps to address poverty and unemployment. Marine protection services and ocean governance is one of the four priority areas within this. Expansion of marine protected areas is an important component of this.
Biodiversity economy transformation nodes	The concept of geographic nodes focusing on a particular type of economic development is taken from the SIPs. Nodes focused on the biodiversity economy have potential for the development of a prosperous and sustainable biodiversity economy that supports social and economic development, biodiversity economy transformation, poverty alleviation, and job creation. The development potential of our rich biodiversity and heritage assets in these nodes is harnessed using the strengths of the various partners to create a vibrant biodiversity economy. These nodes therefore support the implementation of the NBSAP where the management of biodiversity assets (including conservation) and investment in ecological infrastructure contribute to the economy, job creation, rural development, enhanced resilience and benefits to society. An existing biodiversity economy node, the Umfolozi Biodiversity Economy Node is comprised of a series of protected areas around the southern reaches of Ulundi, and includes Hluhluwe-iMfolozi Park, three communal areas being declared as protected areas, and other communally, privately and state owned land. The area has the potential to create a conservation area in excess of 150 000 hectares with a mosaic of sustainable land uses in the dry-land ecosystem where very few other viable land use options to grow the rural economy exist. The development of the Umfolozi Biodiversity Economy Node is facilitated by the wildlife industry through the South African Hunters and Game

	Conservation Association (SAHGCA). Existing productive partnerships are strengthened and new ones between government, communities and private sector established, harnessing the strengths of the various sectors. Although in its infancy, it is already demonstrating that it is possible to achieve sustained economic growth together with securing the natural and heritage resources in an integrated land use planning framework. Biodiversity economy transformation (BET) nodes are a focus of the National Biodiversity Economy Strategy (NBES). The priority nodes form part of an enabling environment for communities and entrepreneurs to participate in the biodiversity economy, while contributing to poverty alleviation, sustainable development and conservation of the country's biodiversity and ecosystem services. These nodes are informed by, amongst other criteria, the Presidential Poverty Nodes for government action, the areas prioritised by the DRDLR, and local economic development (LED) imperatives of local and provincial government. Implementation of the BET node concept in any and all of the priority nodes is a flagship project for the NBSAP.
uMngeni Ecological Infrastructure Partnership (UEIP)	The eThekwini Water and Sanitation Unit's ability to deliver the volume and quality of fresh water required within Durban and to provide sanitation services is becoming increasingly compromised by catchment conditions and dynamics external to the Municipal boundary, specifically in the uMngeni, upper Mooi and Mkomazi catchments. The contribution that ecological infrastructure makes to enhancing water security in the uMngeni is significant and to this end a partnership to safeguard, rehabilitate and manage the ecological infrastructure within the uMngeni catchment has been established. Partners include eThekwini Municipality's Environmental Planning and Climate Protection Department, the KZN office of the Department of Water Affairs, uMngeni Water, SANBI and a host of other stakeholder organisations. The project includes three pilot projects for the programme each found within a participating municipality. A Memorandum of Understanding for the uMngeni Ecological Infrastructure Partnership (UEIP) was signed in November 2013. The uMngeni, including the upper Mooi River catchment above the Spring Grove Dam and Mearn's Weir, and the Upper Mkomazi River catchment above the planned Smithfield and Impendle Dams, in addition to the catchment of uMngeni River itself, is the focus of a possible 19th Strategic Integrated Project (SIP) being considered by the Presidential Infrastructure Coordinating Committee (PICC).
uMzimvubu Catchment Partnership Programme (UCCP)	The Umzimvubu Catchment Partnership Programme (UCPP) aims to conserve the full extent of the Umzimvubu River system (from source to sea) through the sustainable restoration and maintenance of the catchment area in a manner that supports economic development and job creation for local people and enhances flow of benefits from ecosystem goods and services to people and nature. The Umzimvubu River System is prioritized nationally as one of the few remaining "near-natural rivers" but is classified as vulnerable as a result of rapid rates of degradation in the watershed. In addition to the freshwater system, the adjacent matrix of grassland, forest, thicket, and dune vegetation are some of the most biodiverse in the world. The UCPP adopts an action-learning and systems approach, aimed at restoring and protecting catchment integrity and stability, improving livelihoods and resilience of ecosystems and economies, through robust multi stakeholder institutional co-operation. The UCPP has over 30 partners that include but is not limited to local communities, local government authorities, provincial and national government, other public entities, scientists, the academic community, the private sector, community-based organizations and NGOs.
Biodiversity and Land Use Project	The Biodiversity and Land Use Project is funded by the GEF and implemented by SANBI through a five-year implementation plan (2015-2020). It focuses on municipalities as centres of economic growth and service delivery, responsible for regulating land use at a local scale, and important users and managers of biodiversity and ecosystem services. The project aims to strengthen cooperation, coordination and capacity of municipal and

	other regulatory authorities that regulate land use decisions to incorporate criteria to avoid/ prevent, minimize and/or offset impacts on biodiversity, and improve compliance monitoring and enforcement. It aims to introduce mechanisms in collaboration with private and communal land owners to better protect critical biodiversity areas and manage land, while demonstrating the potential of biodiversity to create jobs and contribute to economic growth. The project will work in four district municipalities in global biodiversity hotspots and national biodiversity priority areas, with high rates of habitat degradation and conversion, high levels of poverty, and other pressing needs for action. These include the Amathole, uMgungundlovu, Ehlanzeni, and the Cape Winelands District Municipalities.
Kids in Parks Programme	The Kids in Parks Programme provides a unique opportunity for learners and their educators to visit a national park and learn about natural and cultural heritage. Run as a three-day programme, it exposes learners from nearby schools – and mostly from disadvantaged backgrounds – to the wonders of South Africa's natural heritage in National Parks. Children learn about biodiversity and why it is important, fun and worth conserving through range of fun activities and educational material. The Kids in Parks initiative is being phased in over a period of three years. Each year five different parks will welcome ten groups of 50 learners and 2 teachers. This means that eventually a total of 7 500 learners, 300 educators from 150 primary schools will have visited 15 parks. The programme is a partnership between SANParks, Pick 'n Pay and the departments of Environmental Affairs (DEA) and Education (DoE).
Fundisa for Change	Fundisa for Change is a collaborative programme formed specifically to enhance transformative environmental learning through teacher education. It was established as a partnership programme involving many of South Africa's major environmental organisations, including state, parastatal, NGO and private companies, which have an interest in teacher education. Fundisa's core objective is to strengthen the teaching of environmental concepts in schools. Established in 2011 the network was established in response to research findings from three major environmental sector strategy research programmes: the South African Environmental Sector Skills Plan, the SANBI GreenMatter project and the Biodiversity Human Capital Development Strategy; and the Global Change Grand Challenge National Research Plan Human Capital Development Strategy. These highlighted that the foundations of environmental learning in South Africa needed more attention if the environmental sector human capital development needs of the country were to be met within a longer term sustainability paradigm.
GreenMatter and Biodiversity Human Capital Development Strategy (BHCDS)	GreenMatter is a partnership initiative of SANBI and the Lewis Foundation established to grow biodiversity skills - developing the right people at the right time for the green economy. There are various strategies and frameworks in place to address the demand for more relevant and quality environmental skills in South Africa such as Environmental Sector Skills Plan (ESSP) and the Department of Science and Technologies Global Change Human Capital Development Strategy. However, a concerted national effort is required to drive biodiversity skills development, and that is the specific need to which the GreenMatter Project network of partners responds to through the Biodiversity Human Capital Development Strategy (BHCDS). This flagship project directly supports the implementation of the NBSAP Strategic Objective 5, and contributes to the implementation of the NBSAP as a whole.
Foundational Biodiversity Information Programme (FBIP)	Foundational biodiversity information underpins the implementation of the NBSAP. The Foundational Biodiversity Information Programme (FBIP) aims to fund the generation, mobilization and integration of priority foundational biodiversity knowledge and information so that this can be managed, secured and disseminated to address the needs of society, the Department of Science & Technology (DST) Global Change Programme and the bio-economy. FBIP is an integrated programme that covers programmes such as the South African Biodiversity Information Facility (SABIF), the South African Biosystematics Initiative (SABI) and SeaKeys. SeaKeys is the first large collaborative project funded through the FBIP and

	aims to deliver: national species lists, new species distribution records, DNA barcodes (for common, invasive, commercially important, rare and threatened species), new species descriptions, identification guides and maps, and new tools for ocean decision-making. The Programme will deliver products that contribute to the fulfilment of objectives included in the Aichi Targets, the Global Taxonomic Initiative of the CBD, the Biodiversity Act, NBSAP, NBF, the Global Change and Bio-economy Grand Challenges of DST and its programme on Indigenous Knowledge Systems.
National Biodiversity Information System (NBIS)	An integrated National Biodiversity Information System is core to proactively harnessing, organising, refining, synthesizing and managing biodiversity information and knowledge such that it is accessible and supports policy development and decision-making. It will allow quick and simple access to the biodiversity information and knowledge resource base and will support greater synergy between and impact of various global and national initiatives, such as the Encyclopaedia of Life, Global Biodiversity Information Facility and Biodiversity Heritage Library. SANBI is leading the development and implementation of the System, performing this function in partnership with a wide range of stakeholders including government, other public entities, research institutions, and NGOs. In partnership with others, SANBI will also develop tools that allow for quick and simple access to the knowledge resource base, especially to support, research, policy development and decision-making. The NBIS is fundamental to supporting the implementation of the NBSAP, and contributes to the fulfilment of objectives included in the Aichi Targets.
IPBES Technical Support Unit for the Africa Region	The Intergovernmental Science Policy Platform on Biodiversity and Ecosystem Services (IPBES) Secretariat for South Africa is to host an IPBES Technical Support Unit (TSU) for the Africa Region. The TSU is hosted by the CSIR and receives financial support from IPBES budget, DEA, and CSIR. The TSU support the IPBES Secretariat in the implementation of the IPBES work programme in Africa. This includes: • Providing a mechanism to synthesize, review, assess and critically evaluate relevant information and knowledge generated by government, tertiary and research institutes, scientific organizations, non-governmental organizations and indigenous communities; • Conducting assessments of such information and knowledge in a transparent way by credible groups of experts; and • Strengthening capacity for the effective use of science in decision-making at all levels. This work has begun to show how important biodiversity and ecosystems are in supporting social development, service delivery and economic prosperity, and preparing for climate change. It thus forms an essential component of long term sustainability, security and equity for the country and region.

Institutional Coordination and Monitoring

Institutional Coordination[13]

This section outlines national structures, institutions and partnerships that serve to guide and

[13] The function of existing national structures, institutions and partnerships that provide a platform to coordinate the implementation of the NBSAP are outlined in the section on the Institutional Context.

coordinate the implementation of the NBSAP in terms of their roles and responsibilities in this regard. It also outlines mechanisms for mainstreaming the NBSAP priorities and activities into the policy frameworks, plans and budgets of other sectors.

The Department of Environmental Affairs is mandated to protect the environment and conserve natural resources while balancing this with sustainable development and the equitable distribution of natural resource benefits. DEA fulfils its mandate through formulating, coordinating and monitoring the implementation of national environmental policies, programmes and legislation, and through undertaking appropriate research. DEA led the process in the preparation of the revised NBSAP and is responsible for the coordination and monitoring of its implementation. A number of structures exist in support of this function and are outlined below.

Structures for coordination between the spheres of government on environmental issues:

- Minister and Members of Executive Councils (MEC) Committees (MINMEC), which promotes co-operative governance between the national minister and his or her respective counterparts at provincial level.
- Ministerial Technical Committees (MINTECH), which facilitates coordination between DEA and the provincial environmental departments.
- A series of MINTECH Working Groups (WG), which bring together senior officials in national and provincial government to deal with various environmental management issues.

The requirements for coordination and reporting on progress under Outcome 10 of the Presidential Delivery Agreement have resulted in participation of other departments in these Working Group structures. As a result, these structures provide a valuable forum for coordination and reporting on the implementation of the NBSAP.

In addition, a number of structures exist for coordination on activities related to multilateral environmental agreements. These include the Scientific Committee on the Convention on Migratory Species and the National Ramsar Committee.

Structures provided for to assist with the mainstreaming of NBSAP priorities and activities into the policy frameworks, plans and budgets of other sectors:

- Interdepartmental Committee on Inland Water Ecosystems, which brings together all organs of state relevant to the management of freshwater ecosystems.
- Interdepartmental Project Implementation Committee (IPIC), which was established with representation of DEA, DWA and the Department of Mineral Resources (DMR), with the aim of ensuring aligned implementation of the three Acts from which these departments draw their mandates.
- Regional Mining Development and Environmental Committees (RMDEC), established in all regions, advise the Minister on objections received to prospecting and mining rights or permits, and considers objections to environmental management programmes or plans.
- Other cross-sector collaborations between various institutions catalysed as a result of the Presidential Delivery Agreement

Structures provided for to enable institutional coordination with stakeholders:

- IUCN (International Union for Conservation of Nature) South African National Committee: IUCN enables its members, comprising governments and NGOs to work together to address environmental issues at different levels. The South African

National Committee[14], which includes DEA, several other government members and a number of NGO members, meets regularly to address programmatic issues.

In addition, to these existing fora, **DEA will convene an annual meeting of key stakeholders involved in the implementation of the NBSAP**. This will serve as an important platform for institutional coordination with a particular focus on reviewing and reporting progress towards the NBSAP objectives.

Clearing House Mechanism

The 10th Conference of the Parties to the CBD[15] emphasized the importance of a national **Clearing House Mechanism (CHM)** as means to promote scientific and technical cooperation among parties to the Convention, and to provide information services to facilitate the implementation of the NBSAP. The CHM also serves as an important communication and outreach mechanism for the NBSAP. The CHM will be coordinated by DEA with the aim of:

- Facilitating the creation of a biodiversity knowledge network
- Promoting scientific and technical cooperation, knowledge sharing and information exchange
- Facilitating the implementation of NBSAP.

The CHM will consist of the DEA website (www.environment.gov.za) as a central node for information about the NBSAP, with links to relevant information, programmes, work and partners. Links will be made with the websites and platforms serving biodiversity information maintained by SANBI (www.sanbi.org) as these form an important component of the CHM.

Resource Mobilisation Plan

It is recommended that NBSAPs include a resource mobilization plan which sets out the financial resources needed to implement the NBSAP, how these resources will be mobilised and from which sources, including the national budget, external assistance and innovative or alternative financial mechanisms. The resource mobilization plan should include clear, realistic costing associated with each strategic objective within the NBSAP, including assumptions, unit costs and cost ranges.

The BIOFIN Initiative is global programme working in pilot countries to develop a comprehensive national resource mobilizing strategy, improve cost effectiveness through the mainstreaming of biodiversity into national development and sectoral planning, and develop a methodology for quantifying the biodiversity finance gap at national level.

As one of the 29 pilot countries, BIOFIN is implemented in South Africa by DEA in collaboration with the UNDP Country Office and National Treasury. The implementation of BIOFIN in South Africa will involve costing the revised NBSAP and a policy and institutional review to inform an expenditure review on biodiversity. The costing of the NBSAP, and the expenditure review, will allow for a funding gap analyses. The expenditure review will consider expenditure affecting biodiversity both positively and negatively in a range of relevant public and private sectors, identified through the policy and institutional review. Based on these findings, a resource mobilisation strategy for biodiversity will be developed.

The NBSAP has been aligned with the BIOFIN project to the extent that detail for activities has

[14] https://www.iucn.org/about/union/members/who_members/members_database/

[15] (COP10) Decision X/15 (UNEP/CBD/ COP/10/15)

being developed to a level that provides a useful input to the BIOFIN initiative for costing. More information on BIOFIN is available at http://www.biodiversityfinance.net.

Monitoring and Evaluation

DEA is responsible for monitoring and evaluating the implementation of the NBSAP, including provisions for reporting and tracking progress towards the achievement of the targets. Within DEA, the Chief Directorate: Biodiversity Specialist Monitoring and Services coordinates and oversees monitoring and reporting.

Key components of the Monitoring, Evaluation and Reporting of the NBSAP include:

- Alignment with national reporting frameworks: Efforts have been made to ensure the revised NBSAP is integrated and aligned with key national strategic plans. This ensures that departments and organisations are working towards and reporting on a common set of indicators and targets. Of particular relevance are the MTSF and Outcome 10. The strategic plans and annual performance of each national and provincial department are aligned with the MTSF and the Outcome agreements, which departments report on throughout the year. By aligning the NBSAP with these plans and their monitoring and reporting frameworks, it reduces the burden of reporting and ensures alignment between South Africa's national and international commitments.
- National Reports to the CBD[16]: National Reports to the CBD are required for reporting on progress towards measures taken for the implementation of the Convention, which are reflected in the NBSAP. The fifth meeting of the Conference of the Parties agreed that national reports would be called for on a four-yearly basis. National Reports are important tools in the monitoring and reporting of NBSAPs and also form useful tools to assist with implementation.
- The National Biodiversity Framework: The NBF, provided for as a legislated tool in terms of the Biodiversity Act, identifies the top priority actions and targets for biodiversity management and conservation over a five-year period. Together, the NBF and the NBSAP form the medium term and long range strategic plans for biodiversity management.

A note on indicators and targets:

As far as possible, the NBSAP has drawn on existing indicators and targets, such as those in the MTSF, Outcome 10 or departmental long range strategic plans. This has been done to ensure that the NBSAP is integrated and aligned with and is contributing towards the achievement of existing priorities. Implementing and reporting on the NBSAP is therefore part of government's programme of delivery.

There are however instances where indicators and targets do not exist for certain areas of work. These have been identified in the action plan. In some cases indicators have been proposed, however the adoption of and development of targets for these indicators will need to be taken forward by DEA in its coordination and monitoring role for the NBSAP. This will also require an exercise to review and align these indicators with the existing set of indicators.

[16] https://www.cbd.int/reports/map

Table 4. Summary of NBSAP strategic objectives, outcomes, indicators and targets

Outcomes		Indicators	Targets	Source
SO 1. Management of biodiversity assets and their contribution to the economy, rural development, job creation and social well-being is enhanced				
1.1	The network of protected areas and conservation areas includes a representative sample of ecosystems and species, and is coherent and effectively managed.	Areas protected under the Protected Areas Act (ha, km, km2)	By 2028, in protected areas: 10.8m land-based hectares, 353km inshore, 210 000km2 marine offshore in SA's EEZ plus 93 300km2 marine offshore in Prince Edward Islands EEZ.	NPAES
		Number of hectares in the conservation estate	By 2019, 13.2 % (16 121 794 ha).	MTSF
		METT score	By 2019, 90% of area of state managed protected areas assessed annually with a METT score above 67%.	MTSF
1.2	Species of special concern are sustainably managed	Status of threatened and protected species	No species status declines.	
		% of threatened species conserved ex situ	60% of threatened plant species.	NSPC
		% of species with ex situ collections active in restoration programmes	1% of plant species.	NSPC
1.3	The biodiversity economy is expanded, strengthened and transformed to be more inclusive of the rural poor.	Increase in average annualised GDP growth rate of the SA bioprospecting and wildlife sectors	By 2030, 10% increase.	NBES
1.4	Biodiversity conservation supports the land reform agenda and socio-economic opportunities for communal land holders	Number of settled land claims in protected areas / Protected area estate expanded through the land claim process (ha)	Currently not monitored.	
		Number of settled land claims outside protected areas that include biodiversity conservation in the settlement agreement	Currently not monitored.	
		Number of biodiversity economy projects supported through provincial Biodiversity Stewardship Programmes	Number of projects /annum.	DEA
SO 2. Investments in ecological infrastructure enhance resilience and ensure benefits to society				
2.1	Restore, maintain and secure important ecological infrastructure in a way that contributes to rural development, long-term job creation and livelihoods	Number of significant, integrated water- related ecological infrastructure maintenance or improvement interventions	By 2019, 20 integrated interventions in each of 5 key rural Strategic Water Source Areas.	MTSF
		Hectares of land under restoration/restoration	By 2019, total of 1 370 600 ha restored (1 218 106	MTSF

Outcomes		Indicators	Targets	Source
			ha (DEA) and 152 500 ha (DAFF)), with 3 230 271 ha of follow up treatment by DEA.	
		Number of wetlands rehabilitated	By 2019, 695.	MTSF
		Number of emerging invasive species targeted for early detection	By 2019, 300.	MTSF
		Number of ha of firebreaks and prescribed burning prepared to prevent ecologically damaging fires	By 2019, 398 886 ha.	MTSF
2.2	Ecosystem-based adaptation (EbA) is shown to achieve multiple benefits in the context of sustainable development	Implementation plan for EbA developed, funded and implemented	By 2020, successful implementation results in resilience to climate change in communities linked to pilot projects.	SANBI
SO 3. Biodiversity considerations are mainstreamed into policies, strategies and practices of a range of sectors				
3.1	Effective science-based biodiversity tools inform planning and decision-making	Number of tools developed to support mainstreaming of biodiversity assets and ecological infrastructure in production sectors and resource management	By 2020, ten new tools produced and fifteen knowledge resources demonstrating the value of biodiversity developed and disseminated.	SANBI CSP
		Number of biome adaptation plans implemented	By 2019, implemented Land Degradation National Action Plan and Biodiversity Climate Change Adaptation Plans for 9 biomes.	DEA Strategic Plan
3.2	Embed biodiversity considerations into national, provincial and municipal development planning and monitoring	Completed and approved Spatial development frameworks (SDF's)	By 2019, 100% of all SDFs being developed have biodiversity considerations. SDF's reviewed.	MTSF
		Number of plans into which biodiversity considerations have been embedded	Not currently monitored.	
3.3	Strengthen and streamline development authorisations and decision-making	% of environmental impact assessment applications processed within timeframes, reported quarterly from the National Environmental Assessment System	By 2019, 98%.	MTSF
		Number of environmentally significant areas identified and published for restriction for mining activities	By 2016, 1 environmentally significant area identified, negotiated and published through NEMA.	MTSF
		Number of regulatory interventions developed and implemented to streamline the	By 2019, 8 regulatory interventions.	MTSF

Outcomes		Indicators	Targets	Source
		environmental authorisation process for SIP projects		
3.4	Compliance with authorisations and permits is monitored and enforced	Number of compliance inspections conducted	By 2019, 14500 compliance inspections conducted.	MTSF
		Number of enforcement actions undertaken for non-compliance with environmental legislation	By 2019, 1500 completed criminal investigations handed to the NPA for prosecution (for EMI Institutions) and 3100 administrative enforcement notices issued for non-compliance with environmental legislation.	MTSF
3.5	Appropriate allocation of resources in key sectors and spheres of government facilitates effective management of biodiversity, especially in biodiversity priority areas	Number of sector policies and/or institutional structures adjusted to facilitate the sustainable flow of resources into the biodiversity sector	By 2024, 3 sector policies or institutional structures adjusted.	BIOFIN
3.6	Biodiversity considerations are integrated into the development and implementation of policy, legislative and other tools	Number of legislative tools to ensure the protection of species and ecosystems developed and implemented	By 2019, 20 legislative tools.	MTSF
		Number of country positions for multilateral agreements approved	By 2019, 22 biodiversity-related country positions for multilateral agreements approved.	MTSF
SO 4. People are mobilised to adopt practices that sustain the long term benefits of biodiversity				
4.1	People's awareness of the value of biodiversity is enhanced through more effective coordination and messaging	National strategy, implementation plan and monitoring framework developed, funded and implemented	By 2025, increased awareness is seen against results of monitoring framework.	
4.2	People are mobilised to conserve and sustainably use biodiversity	Increased consumption of biodiversity-friendly products	Currently not monitored.	
SO 5. Conservation and management of biodiversity is improved through the development of an equitable and suitably skilled workforce				
5.1	Macro-level conditions enabled for skills planning, development and evaluation of the sector as a whole	An effective national mechanism is in place and capacitated to coordinate national HCD strategies and priorities	By 2016, cross-partner mechanism in place.	
		A monitoring and evaluation programme is in place	By 2017, M&E framework and evaluation initiated.	
		The BHCDS programme of implementation is	By 2020, funding support to increase from an	

Outcomes		Indicators	Targets	Source
		funded	average of 2% per annum to at least 30%.	
5.2	An improved skills development system incorporates the needs of the biodiversity sector	Representation and framing of biodiversity occupations has taken place with DHET	By 2020, 23 priority occupations identified in the BHCDS included in the Organising Framework for Occupations (OFO).	
		Increased percentage transformation in the biodiversity sector	By 2020, 74% of specialists, monitors, technicians including Government supply chain and partner organisations are from previously disadvantaged groups.	
		Multi and trans-disciplinary curricula in place within higher education institutions	By 2025, at least 40% of universities and university of technologies incorporate biodiversity, natural resource/social science multi and trans-disciplinary curricula into academic programmes.	
		A national biodiversity career guidance initiative is in place to attract black youth into relevant study and career paths	By 2020, all SA HEIs have incorporated biodiversity career guidance into student support.	
5.3	Partnerships are developed and institutions are capacitated to deliver on their mandates towards improved service delivery	Decreased vacancies in provincial and local government institutions	Reduction in vacancies in prioritised specialist professional occupations.	
		Decreased turnover of key positions in provincial and local government institutions	Decrease in turnover.	
		Key positions in DEA and key departments (national, provincial, local) are identified and capacitated to give effect to biodiversity mandates	Mentoring, career pathing and succession planning in place for leadership positions that are critical to the corporate vision and strategy.	
SO 6. Effective knowledge foundations, including indigenous knowledge and citizen science, support management, conservation and sustainable use of biodiversity				
6.1	Relevant foundational data sets on species and ecosystems are in place and well coordinated	Foundational data co-ordination / management system developed, implemented and maintained	Co-ordinating system established for foundational data sets.	
		Report on priority gaps in foundational data sets for species	By 2017, gaps identified.	
		Number of quality controlled records added to spatial data for species - newly collected data, and existing records captured and added to data	200,000 records added to spatial data sets (newly collected); 1 million existing records added to data set.	SANBI CSP

Outcomes		Indicators	Targets	Source
		set and that address priority gaps		
		Number of species for which information has been compiled, including indigenous knowledge where relevant (medicinal and used plants)	By 2025, information for a total of 40 000 species is compiled.	SANBI CSP
		Number of environments for which ecosystem classification systems finalised	By 2017, classifications for four environments completed.	SANBI CSP
		Number of national maps showing distribution of ecosystems	By 2020, four national maps.	SANBI CSP
		Number of institutions contributing data (data / information sharing agreements)	By 2025, 70% of major data holders sharing data.	
		Long term data sets identified, maintained and continued	By 2020, long term data sets available, and programme for ongoing data collection implemented.	
		Number of provinces with functional National Recordal System in place	By 2016, a functional NRS is in place in 7 provinces.	DST Strategic Plan
6.2	The status of species and ecosystems is regularly monitored and assessed.	National Biodiversity Assessment updated	Updated every seven years.	
6.3	Geographic priority areas for the management, conservation and restoration of biodiversity assets and ecological infrastructure are identified based on best available science	Spatial biodiversity plans (provincial, biodiversity sector plans, bioregional plans) are updated at least every five to ten years	By 2025, updates take place at least every five to ten years.	
6.4	Management-relevant and policy-relevant research and analysis is undertaken through collaboration between scientists and practitioners	Number of interventions aimed at advancing the biodiversity science policy interface.	By 2019, 8 Interventions (6 research programmes developed, Biodiversity Research strategy implemented and monitored and national IPBES hub established and functional.	
		An updated implementation plan for the National Biodiversity Research Strategy developed and funded	By 2017, the implementation plan has been completed.	
		Number of amendments to lists / legislation / management practice made through research	By 2016, a tracking system for research impact has been established.	

Outcomes		Indicators	Targets	Source
		outcomes.		
6.5	Knowledge base is accessible and presented in a way that informs decision-making	Single portal exists through which all biodiversity information can be accessed	By 2016, the single portal is established and it is being populated.	

Annexes

Alignment of the NBSAP to the Aichi Targets and other global conventions

Alignment of the NBSAP to the Aichi Targets and other global conventions is useful for country reporting against the conventions or agreements and supports an understanding of the many linkages between strategies.

Table 5 maps the NBSAP outcomes to the:

- Strategic Plan for Biodiversity 2011–2020 and the Aichi targets, which is accessible at https://www.cbd.int/sp/targets/
- Sustainable Development Goals (SDGs) and targets, which is accessible at https://sustainabledevelopment.un.org/focussdgs.html
- National Strategy for Plant Conservation, that aligns with the Global Strategy for Plant Conservation (GSPC), which is accessible from D.Raimondo@sanbi.org.za and is summarized in Figure 15 below.
- Strategic Plan for the Cartagena Protocol on Biosafety, which is accessible at https://bch.cbd.int/protocol/issues/cpb_stplan_txt.shtml#elements
- Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) objectives and deliverables, which is accessible at https://www.environment.gov.za/projectsprogrammes/ipbes

Table 5. Mapping the NBSAP to relevant Conventions and Agreements

NBSAP Strategic Objectives and Outcomes	Aichi Targets	SDG targets	NPCS targets	Cartegena	IPBES
SO 1. Management of biodiversity assets and their contribution to the economy, rural development, job creation and social well-being is enhanced					
1.1. The network of protected areas and conservation areas includes a representative sample of ecosystems and species, and is coherent and effectively managed.	11, 12	1.4, 14.2, 14.5, 15.1, 15.6	4.1, 5.3, 7.2, 9.2		
1.2. Species of special concern are sustainably managed	6, 12, 13	2.5, 12.2, 14.2, 14.4, 15.7, 16.4	8.1-2, 9.1-2, 11.1-4, 12.2-4	1.7	
1.3. The biodiversity economy is expanded, strengthened and transformed to be more inclusive of the rural poor.	6	1.2, 1.4, 8.1-8.3, 8.9, 12.2, 14.2, 15.6			
1.4. Biodiversity conservation supports the land reform agenda and socio-economic opportunities for communal land holders	14, 15, 16	1.4, 12.2			
SO 2. Investments in ecological infrastructure enhance resilience and ensure benefits to society					
2.1. Restore, maintain and secure important ecological infrastructure in a way that contributes to rural development, long-term job creation and livelihoods	9, 11, 14	1.3, 1.5, 6.4-6.6, 8.3, 9.1, 9.5, 14.2, 15.2-4			2a, 2b
2.2. Ecosystem-based adaptation (EbA) is shown to achieve multiple benefits in the context of sustainable development	15	1.3, 1.5, 8.3, 13.1-3, 14.2, 15.6			
SO 3. Biodiversity considerations are mainstreamed into policies, strategies and practices of a range of sectors					
3.1. Effective science-based biodiversity tools inform planning and decision-making	3	9.1, 11.7, 13.2		1.3	
3.2. Embed biodiversity considerations into national, provincial and municipal development planning and monitoring	2, 4	2.4, 7.2, 11.6, 11.7, 13.2, 15.5, 15.8	6.1	1.8	
3.3. Strengthen and streamline development authorisations and decision-making	7	6.3, 12.6			
3.4. Compliance with authorisations and permits is monitored and enforced	8, 9	6.3, 11.7, 12.4, 14.1, 15.7, 15.8	4.2	1.8, 3.1	
3.5. Appropriate allocation of resources in key sectors and spheres of government facilitates effective management of biodiversity, especially in biodiversity priority areas	3, 20	10.5, 15.5, 15.9, 17.1, 17.3			
3.6. Biodiversity considerations are integrated into the development and implementation of policy, legislative and other tools	2 - 16	8.3, 8.9, 13.2, 14.4, 14.6, 15.9, 16.8	5.3, 6.1, 10.1	1.4, 1.5, 1.6, 3.2, 5.1	3d

NBSAP Strategic Objectives and Outcomes	Aichi Targets	SDG targets	NPCS targets	Cartegena	IPBES
SO 4. People are mobilised to adopt practices that sustain the long term benefits of biodiversity					
4.1. People's awareness of the value of biodiversity is enhanced through more effective coordination and messaging	1	12.8, 13.3 & other SDGs	14.1-3	2.5, 2.6, 5.3	4d
4.2. People are mobilised to conserve and sustainably use biodiversity	1, 4	4.7, 14.2, 16.10		5.3	
SO 5. Conservation and management of biodiversity is improved through the development of an equitable and suitably skilled workforce					
5.1. Macro-level conditions enabled for skills planning, development and evaluation of the sector as a whole	Supports all Aichi targets	Supports the SDGs where aligned with NBSAP, but specifically addresses SDG 4.7		2.7	
5.2. An improved skills development system incorporates the needs of the biodiversity sector	Supports all		15.1-3	2.2-2.4	1b
5.3. Partnerships are developed and institutions are capacitated to deliver on their mandates towards improved service delivery	Supports all		6.2, 16.1-2	2.2-2.4, 2.7, 5.2	1a, 1b
SO 6. Effective knowledge foundations, including indigenous knowledge and citizen science, support management, conservation and sustainable use of biodiversity					
6.1. Relevant foundational data sets on species and ecosystems are in place and well coordinated	9, 18, 19, underpins rest of Aichi	Supports the SDGs where aligned with NBSAP	1.1-2., 3.1, 3.3, 13.1, 13.3	4.1	1c
6.2. The status of species and ecosystems is regularly monitored and assessed.	19, underpins rest of Aichi		2.1-2, 3.2	3.2, 4.1	3a, 3b
6.3. Geographic priority areas for the management, conservation and restoration of biodiversity assets and ecological infrastructure are identified based on best available science	11, 12, 19, underpins rest of Aichi		5.1-2, 7.1, 12.1		
6.4. Management-relevant and policy-relevant research and analysis is undertaken through collaboration between scientists and practitioners	19, underpins rest of Aichi		3.4, 13.2	1.3, 1.4, 4.3	1a-d, 4e
6.5. Knowledge base is accessible and presented in a way that informs decision-making	19, underpins rest of Aichi			4.1, 4.2	3c, 4b, 4c

South Africa is signatory to the Convention on Biological Diversity (CBD) and is committed to the implementation of a national strategy to conserve plants that aligns with the Global Strategy for Plant Conservation (GSPC). South Africa has developed a National Strategy for Plant Conservation (NSPC) with modified global targets. The NBSAP alignment to the NSPC is presented in Table 5. Alignment is between NBSAP Outcomes and the Outcomes of the NSPC that sit under its 16 targets, which are grouped under five objectives::

Objective I: Plant diversity is well understood, documented and recognised

Target 1: An online Flora of all known plants

Target 2: An up-to-date assessment of the conservation status of all South African species

Target 3: Information, research and associated outputs, and methods necessary to implement the strategy developed and shared

Objective II: Plant diversity is urgently and effectively conserved

Target 4: Biodiversity targets for terrestrial eco-systems secured through effective management

Target 5: Important areas for plant diversity identified and incorporated into conservation processes

Target 6: Initiatives in place to ensure the sustainable management of production lands consistent with the conservation of plant diversity

Target 7: At least 75% of known threatened plant species conserved in situ

Target 8: At least 60% of threatened plants in ex situ collections, preferably in the country of origin, and available for recovery (restoration) programmes, with 1% in active reintroduction programmes

Target 9: The genetic diversity of crops, including their wild relatives and indigenous edible plant species, conserved while respecting, preserving and maintaining associated indigenous and local knowledge

Target 10: Effective management plans in place to prevent new biological invasions and to manage important areas for plant diversity that are invaded

Objective III: Plant diversity is used in a sustainable and equitable manner

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

Target 12: All wild harvested plant-based products sourced sustainably

Target 13: Indigenous and local knowledge innovations and practices associated with plant resources maintained or increased as appropriate to support customary use, sustainable livelihoods, local food security and healthcare

Objective IV: Education and awareness about plant diversity, its role in sustainable livelihoods and importance to all life on earth is promoted

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

Objective V: The capacities and public engagement necessary to implement the Strategy have been developed

Target 15: The number of trained people working with appropriate facilities sufficient according to national needs, to achieve the targets of this Strategy

Target 16: Institutions, networks and partnerships for plant conservation established or strengthened at national, regional and international levels to achieve the targets of this Strategy

Figure 15. NBSAP alignment to the National Strategy for Plant Conservation

NBSAP steering committee

A steering committee was established to provide guidance and oversight to the revision of the NBSAP. The organisations represented on the steering committee are as follows:

Organization	Representatives
Department of Environmental Affairs	Wilma Lutsch Kiruben Naicker Malta Qwathekana Tracey Cumming Stanley Tshitwamulomoni Edward Netshithothole Lucia Motaung
United Nations Development Programme	Maria Mbengashe
South African National Biodiversity Institute	Kristal Maze Fulufhelo Mukhadi Tammy Smith
South African National Parks	Peter Novellie
Western Cape Department of Environmental Affairs and Development Planning	Albert Ackhurst Marlene Laros
Linkd Environmental Services	Matthew Gaylard Aimee Ginsburg Anthea Stephens

Stakeholder consultation

Stakeholder consultation took place during the course of the NBSAP revision through interviews and stakeholder engagement during two national workshops (November 2014 and April 2015). Table 6 lists stakeholders engaged with in this manner. Views of the youth were also sought through a survey targeting the GroenSebenza Pioneers. The survey elicited 28 respondents whose inputs informed the revision of the NBSAP alongside the inputs from other stakeholders.

Table 6. Stakeholders consulted during the revision of the NBSAP (grey cells indicate invited but unconfirmed attendance at November 2014 workshop)

Name and surname	Organisation	Inter-view	Workshop	
			Nov 2014	Apr 2015
Abigail Kamineth	Gauteng: DARD			
Alan Boyd	DEA			
Albert Arthur Ackhurst	Western cape: DEADP			
Albert Mabunda	Northern Cape			
Albert Mfenyana	Eastern Cape: DEAET			
Alfred Matsheke	Kwa-Zulu Natal: DAE			
Andrew Turner	Cape Nature			
Andrew Zaloumis	iSimangaliso			
Andy Blackmore	Ezemvelo KZN Wildlife			
Angus Burns	WWF-SA			
Azisa Parker	SANBI			
Barbara Weston	DWS			
Barney Kgope	DEA			
Bev Geach	Eastern Cape Parks and Tourism Agency			
Bonani Madikizela	Water Research Council			
Brenda Mphakane	StatsSA			
Bridgette Modiba	DEA			
Bronwyn James	iSimangaliso			
Bruce Mbedzi	Department of Health			
Budu Manaka	SANBI			
Caiphus Khumalo	DEA			

Carina Malherbe	DEA			
Carol Van Wyk	DST (Indigenous Knowledge System)			
Caroline M. Makhetha	DRDLR			
Cecilia Bester	ARC			
Chantal Ramcharan-Kotze	Greenmatter			
Christelle Erasmus	DESTEA			
Christo Marais	DEA			
Churchill Mkwalo	DAFF			
Claire Ntshane	SANParks			
Cliff Rasoesoe	DTI			
Coenie Erasmus	Free State: DETEA			
Constant Hoogkamer	North West			
Cyril Lombard	Phytotrade			
D. Edward Mabogo	Limpopo: LEDET			
Dan Mahlangu	Mpumalanga Tourism and Parks Agency			
Daniel Visser	CSIR			
Dave Balfour	Eastern Cape: DEAET			
Dave Hayter	Free State: DETEA			
David Paule	DENC			
Dean Muruven	WWF-SA			
Deborah Kahatano	DEA			
Desiree Madlala	DEA			
Dineo Makama	SANBI			
Domitilla Raimondo	SANBI			
Donovan Fullard	SANBI			
Edward Netshithothole	DEA			
Eleanor Mcgregor	Gauteng: DARD			
Elise Haber	DIRCO			
Elsabé Swart	DENC Northern Cape			
Elsabe van der Merwe	Ekurhuleni Metropolitan Municipality			
Enid Jantjies	Pioneer			
Ernst Baard	Cape Nature			
Ester Koch	StatsSA			
Fulufhelo Mukhadi	SANBI			
Gavin Cowden	Mpumalanga Tourism and Parks Agency			
Geoff Cowan	DEA			
Gerhard Cilliers	DWS -RQS			
Gerhard van Dyk	Impala Platinum			
Glen Thomas	Eastern Cape Agriculture Eastern Cape			
Grace Mbule	DEA			
Hanneline Smit-Robinson	Birdlife SA			
Harriet Davies-Mostert	EWT			
Henry Roman	DST			
Hermien Roux	North West			
Hlamalang Come	Department of Public Works			
Hlamalang Come	Department of Public Works			
Humbu Mafumo	DEA			
Intelligent Chauke	SALGA			
Ipeleng Machwisa	DEA			
Ismail Lagardien	NPC			
Ivan Riggs	DAFF			
Izak van der Merwe	DAFF			
J. T. Kemp	DIRCO			

Jeffrey Manuel	SANBI			
Jim Taylor	Wessa			
Johan Bester	DAFF			
John Dini	SANBI			
John Donaldson	SANBI			
John Notoane	RESILIM			
John Scotcher	FSA			
Jonathan Denga	North West			
Jones Muleso Kharika	DEA			
Julie Mokwele	DAFF			
Karabo Malakalaka	DEA			
Karl Naude	DEA			
Kedi Aphane	DST (Indigenous Knowledge System)			
Kele Lekoape	Bayer			
Kerry Sink	SANBI			
Kgoale Mphahlele	DST			
Kiruben Naicker	DEA			
Kobie de Ronde	Syngenta			
Koos Smit	Exxaro			
Kristal Maze	SANBI			
L Gaborone	North West			
Lacticia Tshitwamulomoni	DEA			
Lara van Niekerk	CSIR			
Lehlohonolo Phadima	Ezemvelo KZN Wildlife			
Leseho Sello	Consultant			
Liz Metcalfe	ICLEI			
Lizanne Nel	SA Hunters and Game Conservation Association			
Lombard L. Shirindzi	Mpumalanga Tourism and Parks Agency			
Louis Loock	Mpumalanga Tourism and Parks Agency			
Louisa Nkgadime	Pioneer			
Lucia Motaung	DEA			
Lungelwa Nomcego	DAFF			
Luthando Dziba	CSIR			
Machuene Ramonyai	DEA			
Magdal Boshoff	DEA			
Magezi Enock Mhlanga	DRDLR			
Mahlodi Tau	SANBI			
Makha B	Department of Health			
Malebabo Tsolo	Bafokeng platinum			
Mandy Barnett	SANBI			
Mandy Driver	SANBI			
Maria Mbhengashe	UNDP			
Mark Anderson	Birdlife SA			
Marlene Laros	Western cape: DEADP			
Matome Makwela	Chamber of Mines			
Memory Machingambi	Department of Treasury			
Meshack Mofokeng	ARC			
Michelle Hamer	SANBI			
Millicent Makoala	DEA			
Miranda Javu	Medical Research Council			
Motlalepula Gilbert Matsabisa	Medical Research Council			

Mpe Nthabiseng Malefane	DIRCO			
Mpho Gumula	SANBI			
Mpho Mutobvu	South Deep			
Nadine Slabbert	DWS			
Nandipha Bengu	DEA			
Natasha Du Plessis	Limpopo: LEDET			
Ndhuma Makamu	National Department of Tourism			
Ndileka Mohapi	DWS			
Ndivhuwo Tshivhase	North West			
Ndumiso Ngongoma	AfricaBio			
Nic Opperman	AgriSA			
Niki Glen	Sustainable Tourism Partnership Programme			
Nkhumeleni Mbedzi	DEA			
Nokuthula 'Thule' Cele	DAFF			
Noluthando Bam	Eastern Cape: DEAET			
Nomahlubi Sishuba	DEA			
Nompumelelo Obokoh	AfricaBio			
Ntakadzeni Tshidada	DEA			
Ntambudzani Nepfumenbe	DEA			
Ntando Mkhize	DEA			
P Kasumba	Free State: DETEA			
Pamela Kershaw	DEA			
Patrick Duigan	Gauteng: DARD			
Patti Wickens	SAMBF			
Paul Avenant	DAFF			
Peter Lukey	DEA			
Peter Novellie	SANParks			
Philip Ivey	SANBI			
Phoebe Barnard	SANBI			
Phuthi Matlamela	Gauteng: DARD			
Pieter Nel	North West Parks and Tourism			
Pravin Pillay	Ezemvelo KZN Wildlife			
Preshanthie Naicker	DEA			
Prideel Majiedt	SANBI			
Ray Schaller	North West			
Rebecca Masilela	DEA			
Reuben Ngwenya	Mpumalanga Tourism and Parks Agency			
Riana Jacobs-Venter	ARC			
Rinah Sathege	ARC			
Rosie Stanway	CSA			
Ruan Kruger	DBSA			
Russell Galt	SANBI			
Sam Maluleka	Mpumalanga Tourism and Parks Agency			
Sangwata Mansto	SANBI			
Santhuri Naidoo	DEA			
Scurr Nicola	Samancor			
Sebatoala Rahlao	SANBI			
Shanna Nienaber	DST			
Sharlin Hemraj	Department of Treasury			
Shoni E. Mphaphuli	Limpopo: LEDET			
Sibongile Mampe	DEA			

Sibusiso Manzini	GreenMatter			
Sibusiso Thusi	Gauteng: DARD			
Sifiso Nkotwona	EDTEA- KZN			
Simon Gear	Birdlife SA			
Simon Mafu	Gauteng: DARD			
Sinethemba Madondo	Kwa-Zulu Natal: DAE			
Siphumelele Nowele	DEA			
Sixolile Makaula	Eastern Cape: DEAET			
Siyabonga Dlulisa	DEA			
Sonya Meintjies	DEA			
Stanley Liphadzi	Water Research Council			
Stanley Tshitwamulomoni	DEA			
Stephinah Mudau	Chamber of Mines			
Steve Collins	RESILIM			
Steve Nichols	NBI			
T Mokoka	Mpumalanga Tourism and Parks Agency			
T. Netsh	DEA			
Tammy Smith	SANBI			
Tanya Abrahamse	SANBI			
Tebogo Mashua	DEA			
Tendani Mashamba	DEA			
Thabang Mokoena	DRDLR			
Thabo Kgommomu	DEA			
Thabo Tjikana	DAFF			
Thato Mogapi	DEA			
Theo Boshoff	AgriSA			
Theo van der Merwe	DAFF			
Theressa Frantz	WWF-SA			
Thizwilondi Rambau	DEA			
Thomas Mathiba	DEA			
Thuneke Nthoke	DEA			
Tlou Masehela	SANBI			
Tom Suchanadan	DST (Indigenous Knowledge System)			
Tondani Kone	DEA			
Tracey Cumming	DEA: BIOFIN			
Tumelo Ratlou	DEA			
Vivian Malema	SANBI			
Vongani Maringa	DEA			
Vukani Mgobozi	DEA			
Vuledzani M	DAFF			
Wadzi Mandivenyi	DEA			
Warwick Mostert	SAMBF			
Willeen Olivier	DEA			
Wilma Lutsch	DEA			
Xola Mkefe	DEA			
Yakeen Atwaru	DWS			
Zaitoon Rabaney	Botanical society			
Zethembiso Mkhize	DEA			

References

Allsopp, M.H., de Lange, W.J., and R. Veldtman. 2008. Valuing Insect Pollination Services with Cost of Replacement. PLoS ONE 3(9): e3128. doi:10.1371/journal.pone.0003128

Collings, S.L. 2009. Economic Consequences of Ecological Change: Restoration options for the Mfolozi Floodplain and implications for Lake St Lucia, South Africa. MSc thesis, Rhodes University, Grahamstown.

DAFF. 2012. Agriculture, Forestry and Fisheries Integrated Growth and Development Plan 2012. Department of Agriculture, Forestry and Fisheries. Available at http://www.daff.gov.za/docs/Policy/IGDP121.pdf

DEAT (Department of Environmental Affairs and Tourism, Republic of South Africa). 1998. South African National Report on the Convention on Biological Diversity. January 1998 report to the Fourth Conference of the Parties. Available at https://www.cbd.int/doc/world/za/za-nr-01-en.pdf

DEAT (Department of Environmental Affairs and Tourism). 2005. South Africa's National Biodiversity Strategy and Action Plan. DEAT, Pretoria. 110 pages.

DEAT (Department of Environmental Affairs and Tourism, Republic of South Africa). 2006. South Africa's Third National Report to the Convention on Biological Diversity. February 2006. Available at http://www.bipindicators.net/LinkClick.aspx?fileticket=4H7bWDQp8QE%3D&tabid=178

DEAT (Department of Environmental Affairs and Tourism, Republic of South Africa). 2009. South Africa's Fourth National Report to the Convention on Biological Diversity. Available at http://www.anchorenvironmental.co.za/Documents/Pdfs/CDB%204th%20National%20Report%20FINAL%20submitted%20to%20CBD.pdf

DEA (Department of Environmental Affairs). 2012. Draft report on the study of nature and extent of bioprospecting and biotrade industry in South Africa. Department of Environmental Affairs, Pretoria.

DEA (Department of Environmental Affairs), Department of Mineral Resources, Chamber of Mines, South African Mining and Biodiversity Forum, and South African National Biodiversity Institute. 2013. Mining and Biodiversity Guideline: Mainstreaming biodiversity into the mining sector. Pretoria. 100 pages.

DEA. 2014. National Biodiversity Research Development & Evidence Strategy (2015-2025). Department of Environmental Affairs, Pretoria. 39 Pages

DEA. *Draft*. National Man and Biosphere Strategy. DEA led strategy under development.

Gaylard, M., Huyser, O. and H. Fox. 2014. NBSAP 2005: Stocktaking and gap analysis. Report for Department of Environmental Affairs and United Nations Development Programme. November 2014.

Huntley, B.J. and K.H. Redford. 2014. 'Mainstreaming biodiversity in Practice: a STAP advisory document'. Global Environment Facility, Washington, DC.

Mander, M., Ntuli, L., Diederichs, N. & Mavundla, K. 2007. Economics of traditional medicine trade in South Africa. In S. Harrison, R. Bhana & A. Ntuli (eds), South African Health Review 2007. Health Systems Trust, Durban.

NBA. 2011. National Biodiversity Assessment 2011: An assessment of South Africa's biodiversity and ecosystems. Synthesis Report. By Driver, A., Sink, K.J., Nel, J.N., Holness,

S., Van Niekerk, L., Daniels, F., Jonas, Z., Majiedt, P.A., Harris, L. & Maze, K. South African National Biodiversity Institute and Department of Environmental Affairs, Pretoria.

NPC (National Planning Commission). 2012. Executive Summary National Development Plan 2030. Our future - make it work. RSA. Available at http://www.gov.za/issues/national-development-plan-2030

RSA. 2010. National Protected Area Expansion Strategy for South Africa 2008 - Priorities for expanding the protected area network for ecological sustainability and climate change adaptation. Government of South Africa, Pretoria, 2010.

RSA (Republic of South Africa). 2014. South Africa's Fifth National Report to the Convention on Biological Diversity. Available at https://www.google.co.za/url?sa=t&rct=j&q=&esrc=s&source=web&cd=1&cad=rja&uact=8&ved=0CBwQFjAA&url=https%3A%2F%2Fwww.cbd.int%2Fdoc%2Fworld%2Fza%2Fza-nr-05-en.pdf&ei=4b5FVeddpsLuBueUgbgB&usg=AFQjCNHLfzIy-H5_37Y82GNLTvCIVaCWyg&sig2=W4QNIfICz4P-pkj7v6vFfA

SANBI. 2014a. Biodiversity Mainstreaming Toolbox for land-use planning and development in Gauteng. Compiled by ICLEI – Local Governments for Sustainability. 116 pages. Available at http://biodiversityadvisor.sanbi.org/wp-content/uploads/2014/12/Gauteng-Biodiversity-Mainstreaming-Toolbox_final.pdf

SANBI. 2014b. Review report of public-private cooperation for biodiversity and ecosystem management in South Africa. Report for SANBI, ProEcoServ, UNEP, GEF, CSIR and NBI. Compiled by A. Ginsburg. Submitted 7 November 2014. Available at http://biodiversityadvisor.sanbi.org/industry-and-conservation/public-private-cooperation-for-biodiversity-and-ecosystem-management-in-south-africa/

SANBI. 2014c. Factsheet on biodiversity stewardship, first edition. South African National Biodiversity Institute, Pretoria.

SANBI. 2014d. A Framework for investing in ecological infrastructure in South Africa. South African National Biodiversity Institute, Pretoria.

SANBI. 2014e. Ecological Infrastructure fact sheet. South African National Biodiversity Institute, Pretoria. Available at http://www.sanbi.org/biodiversity-science/science-policyaction/mainstreaming-biodiversity/ecological-infrastructure

SANBI and the Lewis Foundation, 2010. A Human Capital Development Strategy for the Biodiversity Sector, 2010 – 2030.

Shackleton, C. 2004. Assessment of the Livelihoods Importance of Forestry, Forests and Forest Products in South Africa. Unpublished report, Rhodes University.

Van Niekerk L. & Turpie J.K. (eds). 2012. National Biodiversity Assessment 2011: Technical Report. Volume 3: Estuary Component. CSIR Report Number CSIR/NRE/ECOS/ER/2011/0045/B. CSIR, Stellenbosch. Figure updated from Lamberth & Turpie 2003.

Van Wilgen, B.W., Reyers, B., Le Maitre, D.C., Richardson, D.M. & Schonegevel, L. 2008. A biome-scale assessment of the impact of invasive alien plants on ecosystem services in South Africa. Journal of Environmental Management 89: 336–349.