

ENVIRONMENTAL AFFAIRS



SOUTH AFRICA
YEARBOOK
2010/11

South Africa is the third most biologically diverse country in the world. It encompasses about 1 200 000 km² and has about 10% of all plant species on Earth. The climate is moderate and the land ranges from desert to grassland to subtropical swamp, all helping to create a country that contains some of the world's most diverse animals and plant life. South Africa has the world's richest floral kingdom, which produces a brief but bright and colourful flowering season.

South Africa is also home to one-sixth of the world's marine species with the Indian Ocean on the east coast and the Atlantic on the west coast. South Africa has more species of wild animals than Europe and Asia put together and a vast variety of endemic and migratory birds.

The vision of the Department of Environmental Affairs is to create a prosperous and equitable society living in harmony with the environment.

The department aims to improve the levels of service delivery relating to waste management, pollution, air quality, adaptation to the impacts of climate change, biodiversity and conservation.

Policy and legislation

The National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004), provides a regulatory framework to protect South Africa's valuable species, ecosystems and its biological wealth. It implements the *White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity* (1997) and multilateral agreements such as the United Nations (UN) Convention on Biological Diversity (CBD), which came into force in December 1993.

The National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003), provides for the protection and conservation of ecologically viable areas that are representative of South Africa's biological diversity, its natural landscapes and seascapes, and the management of these.

The Act envisages a national register of protected areas, with a simplified classification system of national parks, nature reserves and protected environments. It also introduces the concept of biological-diversity protection and ecosystem management. Biodiversity, conservation and ecosystem management are noted as important aims in policy and legislation that govern marine

and coastal resources, fresh water and natural forests.

Regulations in terms of the National Environmental Management: Protected Areas Amendment Act, 2004 (Act 31 of 2004), provide for the proper administration of specific nature reserves, national parks and world heritage sites.

South Africa is one of only two countries in the world to have promulgated legislation specifically related to the World Heritage Convention (the other being Australia), which was adopted by the UN in 1972.

The country's World Heritage Convention Act, 1999 (Act 49 of 1999), stipulates that all world heritage sites must have an integrated management plan in place to ensure cultural and environmental protection and sustainable development of the site.

The National Environmental Management: Waste Act, 2008 (Act 59 of 2008), came into effect on 1 July 2009. The Act provides for the drawing up of the National Waste-Management Strategy (NWMS) within two years.

By mid-2010, the department had developed a draft NWMS, which, among other things, responds to challenges in respect of specific categories of waste and describes the application of different instruments for each waste category. The strategy is a guide on how to reduce the amount of waste generated, recover material where possible, recycle and reuse waste.

The National Policy on the Thermal Treatment of Hazardous and General Waste was implemented during 2010/11.

The implementation of the asbestos regulations, promulgated in 2007/08 to prohibit the use, manufacture, import and export of asbestos and asbestos-containing materials, is progressing well.



At the end of September 2010, the former Minister of Water and Environmental Affairs, Ms Buyelwa Sonjica, and the MECs responsible for the environmental portfolio in the provinces, signed delivery agreements to realise Outcome 10, which takes its cue from President Jacob Zuma's State of the Nation Address 2010, wherein he committed that government would ensure that the country's environmental assets and natural resources are valued, protected, and continually enhanced.

World Summit on Sustainable Development (WSSD)

Johannesburg hosted the WSSD in September 2002. The agreements reached in Johannesburg are a guide to action that will take forward the UN Millennium Summit Declaration's goal of halving world poverty by 2015, and will incorporate decisions taken by world bodies since the Rio Earth Summit in 1992.

The biggest success was getting the world to turn the UN Millennium Declaration into a concrete set of programmes and to mobilise funds for these programmes.

Targets set at the summit will have an enormous impact, including the following:

- the number of people without basic sanitation and access to safe drinking water will be halved by 2015
- collapsed fish stocks will be restored by 2015
- chemicals with a detrimental health impact will be phased out by 2020
- energy services will be extended to 35% of African households over the next 10 years.

National Framework for Sustainable Development (NFSD)

In July 2008, the Cabinet passed the NFSD. The NFSD discusses the various environmental and social risk areas facing South Africa and maps out five strategic priority areas:

- enhancing systems for integrated planning and implementation
- sustaining the country's ecosystems and using resources sustainably
- investing in sustainable economic development and infrastructure
- creating sustainable human settlements



In November 2010, the Deputy Minister of Water and Environmental Affairs, Ms Rejoice Mabudafhasi, handed over the R41-million Mnquma Buyisela/Eco-Town as part of her Public Participation Programme in the Eastern Cape.

The Mnquma Local Municipality is one of 10 municipalities identified to be the recipients of the Buyisela/Eco-Town concept. The project entails the installation of bins, equipment and street furniture; the construction of gateways and storage facilities; the planting of trees and ornamental plants; upgrading of public facilities; clearing of open spaces; and the establishment of food gardens. The project created 283 jobs for the local community.

The Department of Environmental Affairs has set aside R400 million for the Buyisela Eco-Towns Programme.

- responding appropriately to emerging human development, economic and environmental challenges.

Formal implementation of the action plan commenced in 2010.

Biological diversity

South Africa enjoys the third-highest level of biodiversity in the world. The country's rich natural heritage is vast and staggering in its proportions.

Although the country covers only 2% of the world's land area, nearly 10% of the world's plants and 7% of its reptiles, birds and mammals are found here. In terms of the number of endemic species of mammals, birds, reptiles and amphibians, South Africa is ranked as the fifth-richest country in Africa and the 24th-richest in the world in terms of biodiversity. It is one of only 17 countries that collectively contain two-thirds of the world's biodiversity. The three internationally recognised biodiversity hotspots in South Africa are the Cape Floral Region in the south, the Succulent Karoo that the country shares with Namibia, and that of Maputoland-Pondoland in the east, which extends into Swaziland and Mozambique.

South Africa's marine life is similarly diverse, partly as a result of the extreme contrast between the water masses on the east and west coasts.

According to the *White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity* (1997), over 10 000 plant and animal species – almost 15% of the coastal species known worldwide – are found in South African waters, with about 12% of these occurring nowhere else.

The country's natural heritage is best described according to a systematic classification of regions, or biomes. A biome is a broad ecological unit representing a major life zone, which extends over a large area, and contains relatively uniform plant and animal life closely connected with environmental conditions, especially climate.

The White Paper states that South Africa is one of six countries in the world with an entire plant kingdom within its national confines. The Cape Floral Kingdom has the highest-recorded species diversity for any similar-sized temperate or tropical region in the world.

Other biomes in the country are also of global conservation significance. For example, one-third of the world's succulent plant species are found in South Africa.

There are eight major terrestrial biomes, or habitat types, in South Africa, which can, in turn, be divided into 70 veld types.

Savanna Biome

The Savanna Biome is the largest biome in southern Africa, occupying 46% of its area, and over one-third the area of South Africa. This biome is an area of mixed grassland and trees, and is generally known as bushveld.

In the Northern Cape and Kalahari sections of this biome, the most distinctive trees are the camel thorn (*Acacia erioloba*) and the camphor bush (*Tarchonanthus camphoratus*).

In Limpopo, the portly baobab (*Adansonia digitata*) and the candelabra tree (*Euphorbia ingens*) dominate. The central bushveld is home to species such as the knob thorn (*Acacia nigrescens*), bushwillow (*Combretum spp.*), monkey thorn (*Acacia galpinii*), mopani (*Colophospermum mopane*) and wild fig (*Ficus spp.*). In the valley bushveld of the south, euphorbias and spekboom trees (*Portulacaria afra*) dominate.

Abundant wild fruit trees provide food for many birds and animals in the Savanna Biome. Grey loeries, hornbills, shrikes, flycatchers and rollers are birds typical of the northern regions. The subtropical and coastal areas are home to Knysna loeries, purple-crested loeries and green pigeons. Raptors occur throughout the biome. The larger mammals include lion, leopard, cheetah, elephant, buffalo, zebra, rhinoceros, giraffe, kudu, oryx, waterbuck, hippopotamus and many others.

About 8,5% of the biome is protected. The Kruger National Park, Kgalagadi Transfrontier Park, Hluhluwe-Umfolozi Park, iSimangaliso Wetlands Park and other reserves are located in the Savanna Biome.

Nama-Karoo Biome

The Nama-Karoo is the third-largest biome in South Africa, covering about 20,5% of the country or more than 260 000 km². It stretches across the vast central plateau of the western half of the country and is a semi-desert that receives a little rain in summer.

Rainfall varies from about 200 mm a year in the west to 400 mm a year in the northeast. Summer is very hot and winter is very cold with frequent frost.

Most of the plants are low shrubs and grass. Many plants are deciduous. Trees such as the sweet thorn (*Acacia karoo*) are

usually only found along rivers or on rocky hillsides.

Common animals include the bat-eared fox, ostrich, spring hare, tortoises and brown locust. The riverine rabbit is a threatened species found in the Nama-Karoo Biome.

This biome includes the Namaland area of Namibia, and the central Karoo area of South Africa.

Because of low rainfall, rivers are non-perennial. Cold and frost in winter and high temperatures in summer demand special adaptations from plants. The vegetation of this biome is mainly low shrubland and grass, with trees limited to water courses.

Only 1% of the Nama-Karoo Biome falls within officially protected areas, of which the Karoo and Augrabies national parks are the largest.

Overgrazing and easily eroded soil surfaces are causing this semi-desert to creep slowly in on the neighbouring savanna and grassland biomes.

Grassland Biome

The Grassland Biome is the second-largest biome in South Africa, covering an area of 339 237 km² and occurring in eight of South Africa's nine provinces. The Grassland Biome is one of the most threatened biomes in South Africa, with 30% irreversibly transformed and only 1,9% of the biodiversity target for the biome formally conserved. The Grassland Biome provides essential ecosystems services, such as water production and soil retention necessary for economic development. It contains important biodiversity of global and domestic significance and value.

Trees are scarce and are found mainly on hills and along riverbeds. Kree (Rhus lancea), wild currant (Rhus pyroides), white stinkwood (Celtis africana) and several acacia species are the most common.

The Grassland Biome has the third-largest number of indigenous plant species in the country.

Eight mammal species endemic to South Africa occur in a wild state in this biome.

The area is internationally recognised as an area of high species endemism as far as birds are concerned. Birds commonly found in the area include the black korhaan, blue crane and guinea-fowl.

In July 2010, government committed itself to the conservation of grassland biodiversity through the signing of a declaration of various role players.

The goal is to sustain and secure biodiversity and associated ecosystem services of the Grassland Biome for the benefit of current and future generations.

The declaration cites active measures to be taken that involve a wide range of interested and affected parties, including local communities and resource users, in the management and conservation of biodiversity in the Grassland Biome.

Succulent Karoo Biome

The Succulent Karoo Biome covers a flat to gently undulating plain, with some hilly and "broken" veld, mostly situated to the west and south of the escarpment, and north of the Cape Fold Belt.

One of the natural wonders of South Africa is the annual blossoming of the Namaqualand wild flowers (mainly of the family *Asteraceae*), which transforms the semi-desert of the Northern Cape into a fairytale. After rain, the drab landscape is suddenly covered from horizon to horizon with a multicoloured flower carpet (from August to October, depending on the rainfall).

This is a winter-rainfall area with extremely dry and hot summers. Succulents with thick, fleshy leaves are plentiful. Most trees have white trunks to reflect the heat.

The quiver tree (*Aloe dichotoma*) and the human-like elephant's trunk (*Pachypodium namaquanum*) are prominent in the Richtersveld. Grass is scarce.

The animal life is similar to that of neighbouring biomes (Fynbos and Nama-Karoo).

The Succulent Karoo Biome includes 2 800 plant species at increased risk of extinction.

Fynbos Biome

The Fynbos Biome is one of the six accepted floral kingdoms of the world. This region covers only 0,04% of the land surface of the globe.

Fynbos is found mainly in the Western Cape.

Fynbos is the name given to a group of ever-green plants with small, hard leaves (such as those in the *Erica* family). It is



At the end of August 2010, the fourth People and Parks Conference took place in KwaZulu-Natal under the theme *Conservation for the People with the People*.

At the same time, the National Co-Management Framework was launched and various issues of transformation in the biodiversity and conservation sector were addressed.

made up mainly of the protea, heathers and restio, and incorporates a diversity of plant species (more than 8 500 kinds, over 6 000 of which are endemic).

The Fynbos Biome is famous for the protea, for which South Africa is renowned. The biome also contains flowering plants now regarded as garden plants, such as freesia, tritonia, sparaxis and many others.

Protected areas cover 13,6% of the Fynbos Biome and include the Table Mountain and Agulhas national parks.

This biome is not very rich in bird and mammal life, but does include the endemic Cape grysbok, the geometric tortoise, Cape sugarbird and the protea seed-eater. The mountains are the habitat of the leopard, baboon, honey-badger, caracal, rhebuck and several types of eagle and dassies.

Forest Biome

South Africa's only significant forests are those of Knysna and Tsitsikamma in the Western and Eastern Cape, respectively.

Other reasonably large forest patches that are officially protected are in the high-rainfall areas of the eastern escarpment, and on the eastern seaboard. Forest giants such as yellowwood (*Podocarpus spp.*), ironwood (*Olea capensis*) and lemonwood (*Xymalos monospora*) dominate.

The indigenous forests are a magical world of ferns, lichens, and colourful forest birds such as the Knysna loerie, the endangered Cape parrot and the rameron pigeon. Mammals include the endangered samango monkey, bushpig, bushbuck and the delicate blue duiker.

Thicket Biome

The Thicket Biome is the second-smallest biome in South Africa, and is known for its high biodiversity.

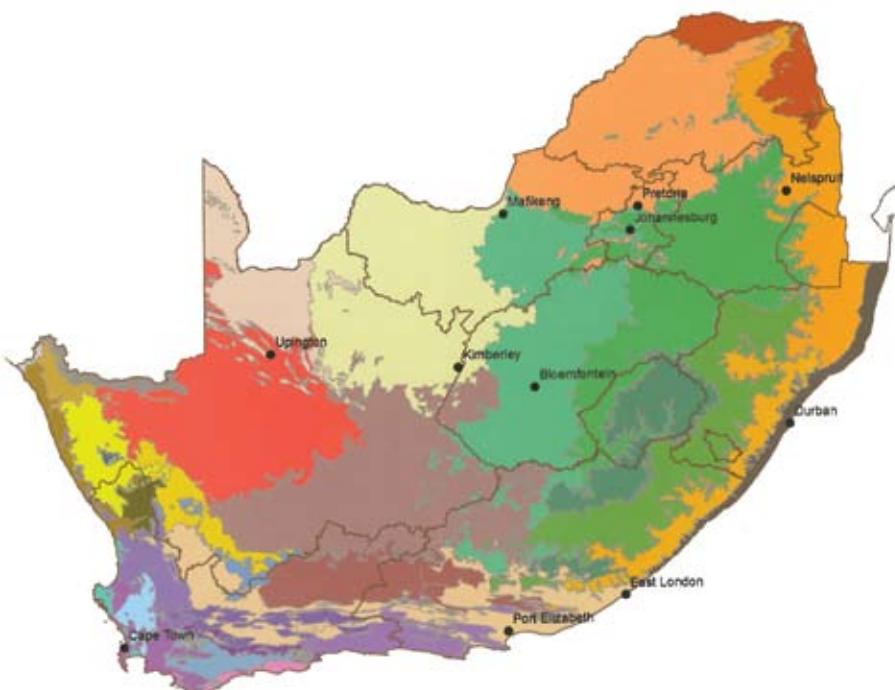
Subtropical thicket ranges from closed shrubland to low forest, dominated by evergreen succulent trees, shrubs and vines.

It is often impenetrable and has little herbaceous cover. Roughly 20% of the species in the Thicket Biome are endemic to it.

The Thicket Biome is centred predominantly in the Eastern Cape.

The Thicket Biome in the Eastern Cape supports four species of tortoises: the leopard tortoise (*Geochelone pardalis*), angulate tortoise (*Chersina angulata*), tent tortoise (*Psammobates tentorius*) and parrot-beaked tortoise (*Homopus areolatus*).

Bioregions of South Africa



Northwest Fynbos Bioregion	Southern Namib Desert Bioregion
Southwest Fynbos Bioregion	Gariep Desert Bioregion
Southern Fynbos Bioregion	Bushmanland Bioregion
South Coast Fynbos Bioregion	Upper Karoo Bioregion
Western Fynbos-Renosterveld Bioregion	Lower Karoo Bioregion
Eastern Fynbos-Renosterveld Bioregion	Drakensberg Grassland Bioregion
West Coast Renosterveld Bioregion	Dry Highveld Grassland Bioregion
East Coast Renosterveld Bioregion	Mesic Highveld Grassveld Bioregion
Karoo Renosterveld Bioregion	Sub-Escarpment Grassland Bioregion
Namaqualand Cape Shrublands Bioregion	Central Bushveld Bioregion
West Strandveld Bioregion	Mopane Bioregion
West Strandveld Bioregion	Lowveld Bioregion
Richtersveld Bioregion	Sub-Escarpment Savanna Bioregion
Namaqualand Hardeveld Bioregion	Eastern Kalahari Bushveld Bioregion
Namaqualand Sandveld Bioregion	Kalahari Dunneveld Bioregion
Knersvlakte Bioregion	Albany Thicket
Trans-Escarpment Succulent Karoo Bioregion	Indian Ocean Coastal Belt
Rainshadow Valley Karoo Bioregion	

Source: Vision Endangered Wildlife Trust Seventeenth Annual

Desert Biome

True desert is found under very harsh environmental conditions, which are even more extreme than those found in the Succulent Karoo and the Nama-Karoo biomes. The climate is characterised by summer rainfall, but also by high levels of summer aridity. Rainfall is highly variable from year to year. Desert is found mostly in Namibia, although it does occur in South Africa in the lower Orange River Valley.

The vegetation of the Desert Biome is characterised by the dominance of annual plants (often annual grasses). This means that after a rare season of abundant rain, the desert plains can be covered with a sea of short annual grass, whereas in drier years, the plains appear bare with the annual plants persisting in the form of seeds.

Perennial plants are usually encountered in specialised habitats associated with local concentrations of water. Common examples of such habitats are broad drainage lines or washes. Nearer the coast, coastal fog also governs the distribution of certain species commonly associated with the desert.

The Desert Biome incorporates an abundant insect fauna, which includes many tenebrionid beetles, some of which can use fog water. There are also various vertebrates, including reptiles, springbok, ostrich, gemsbok, snakes and geckos.

Some areas in the Desert Biome are formally protected in the Richtersveld National Park.

Conserving biodiversity

Biodiversity plays a crucial role in sustainable development and poverty eradication.

South Africa as a biodiversity-rich country, is committed to the conservation and sustainable management of biological resources and is signatory to the following biodiversity-related multilateral agreements:

- CBD
- Cartagena Protocol on Biosafety
- Ramsar Convention
- Convention on International Trade in Endangered Species (Cites)
- Convention to Combat Desertification (UNCCD)
- Convention on Migratory Species.

South Africa's commitment as a signatory to these agreements is shown by its compliance with their many requirements and provisions. South Africa has developed a suite of biodiversity-related laws, policies and programmes, cutting across various government departments to address its

priority policies and to comply with international agreements.

The publication in 2006 of the *National Spatial Biodiversity Assessment* by the then Department of Environmental Affairs and Tourism and South African National Biodiversity Institute (Sanbi), revealed that 34% of South Africa's ecosystems are threatened, with 5% critically endangered; while 82% of the 120 main rivers are threatened and 44% critically endangered. Of the 13 groups of estuarine biodiversity, three are in critical danger and 12% of marine biozones are under serious threat.

Because of the geographic spread and diversity of South Africa's plant and animal species – up to 80% of significant biodiversity lies outside existing protected areas – a traditional approach to conservation is inadequate. Biodiversity priorities have to be integrated with all policies, plans and programmes.

South Africa's National Biodiversity Strategy and Action Plan (NBSAP) guides conservation and the management of biodiversity to ensure sustainable and equitable benefits for all communities.

The NBSAP highlights five strategic objectives, such as the need for a network of protected areas that conserves a sample of all South Africa's biodiversity; specifies how these are to be realised; and sets five- and 15-year targets for each.

The NBSAP also provides for the entrenchment of biodiversity concerns in production sectors, such as mining and forestry, by focusing on the inclusion of biodiversity priorities in guidelines and codes of best practice, and on measures to encourage sustainable production practices.

The NBSAP informs the creation, in law, of the National Biodiversity Framework to ensure an integrated, coordinated and consistent approach to biodiversity management by organs of state in all spheres of



Important dates:

- World Wetlands Day: 2 February
- National Water Week: 19 to 25 March
- Earth Day: 20 March
- World Water Day: 22 March
- World Meteorological Day: 23 March
- World Environment Day: 5 June
- World Oceans Day: 8 June
- World Desertification Day: 17 June
- National Arbour Week: 1 to 7 September
- International Day for the Protection of the Ozone Layer: 16 September
- World Tourism Day: 27 September
- World Habitat Day: 4 October
- National Marine Day: 20 October

government, non-governmental organisations (NGOs), the private sector, local communities, other stakeholders and the public.

Important role players are the South African Biosystematics Initiative, South African Environmental Observation Network, Biobank South Africa and genebanks.

South African National Biodiversity Institute

Sanbi is responsible for exploring, revealing, celebrating and championing biodiversity for the benefit and enjoyment of all of South Africa's people.

As well as being the custodian of the National Botanical Gardens' system, Sanbi is a respected authority in research and has an unmatched research record in the indigenous, naturalised and alien flora of South and southern Africa, and beyond. Sanbi's research management covers systematics and collections expansion, conservation and applied biodiversity science, and climate change.

The institute's Knowledge Management and Planning Branch strives to make biodiversity science more available and accessible through various mainstreaming projects and initiatives. Sanbi is also responsible for ensuring that biodiversity knowledge influences policy, management and decision-making.

Sanbi's biome programmes, which focus on South Africa's biodiversity hotspots, aim to ensure that the country's most important biodiversity regions, such as the grasslands, wetlands, and succulent Karoo, are protected in a sustainable and beneficial way. As part of its mandate, Sanbi also monitors and reports to the Minister of Water and Environmental Affairs on the status of South Africa's biological diversity – that of listed threatened or protected species, listed ecosystems and listed invasive species.

Sanbi manages nine national botanical gardens (classified as "conservation gardens") in five of South Africa's nine provinces. Together, they conserve more than 7 500 ha of natural vegetation. The gardens collectively attract over one million visitors a year, are signatories to the International Agenda for Botanic Gardens in Conservation, which was launched in 2000, and are founding members of the African Botanic Gardens Network.

The botanical gardens are:

- Kirstenbosch, Cape Town
- Pretoria
- Herold Porter, Betty's Bay

- Walter Sisulu, Roodepoort

- Hantam, Nieuwoudtville

- Free State, Bloemfontein

- Karoo Desert, Worcester

- KwaZulu-Natal, Pietermaritzburg

- Lowveld, Nelspruit

Sanbi operates environmental-education programmes within its national botanical gardens, and outreach greening programmes focus on promoting indigenous gardening at disadvantaged schools in surrounding areas.

Biosystematics research and biodiversity collections

The Biosystematics Research and Biodiversity Collections Division forms the basis of Sanbi's research activities. The division investigates, classifies, names and documents southern Africa's biota. Fundamental biodiversity information is generated and made available to other divisions within Sanbi, conservation authorities, decision- and policy-makers, the general public and other stakeholders. The division also incorporates the Ethnobotany Unit based in Durban and the Data Management Section based in Pretoria.

The National Herbarium, situated within the Pretoria National Botanical Garden, houses the largest collection of scientific plant specimens in southern Africa with over one million specimens.

The Crompton Herbarium in Cape Town focuses mainly on the flora of the winter-rainfall region of southern Africa, while the KwaZulu-Natal Herbarium in Durban primarily focuses on the flora of the subtropical eastern region of South Africa, in particular the flora of the province.

South Africa, with its 11 700 endemic plant species, has the richest temperate flora in the world. Sanbi is increasingly embracing biodiversity in its broadest sense through inclusion of the country's fauna as part of its taxonomic research mandate. Sanbi



In August 2010, a medicinal plant-conservation project in Limpopo, which is expected to advance the need for development, promotion and protection of natural, biological resources in the area, was launched in Maila Village, outside Makhado.

The medicinal plants are used to treat various ailments. In South Africa, traditional medicine is the preferred primary healthcare choice for about 70% of the population.

The Department of Environmental Affairs has set aside about R20 million for the implementation of the project.

is coordinating a catalogue of all South Africa's species (at least 100 000), including animals, through the South African Tree of Life Project.

Biodiversity research

Applied biodiversity research

The Applied Biodiversity Research Division undertakes and coordinates biodiversity research that provides a scientific knowledge base for decision-making. The diverse portfolio of research projects deals with contemporary issues relating to the conservation and sustainable use of biodiversity and the contribution of biodiversity to sustainable development. There is a strong focus on meeting the research needs of the NBSAP and the implementation of the National Environmental Management-Biodiversity Act (Nemba), 2004 (Act 10 of 2004).

The research is organised into field weather-station interactive programmes that focus on three broad areas relating to biodiversity conservation and sustainable development:

- risks to biodiversity
- the value and use of species and ecosystems
- understanding the dynamics of species and ecosystems of special concern.

Climate Change and Bio-Adaptation Division

The role of the Climate Change and Bio-Adaptation Division is to lead and coordinate research and communication regarding South Africa's response to the biodiversity impacts of climate change. The division does scientific work, and also provides communication and policy products to support world-leading efforts by the Department of Environmental Affairs in climate-change responses.

The division focuses on the globally unique mega-diverse winter-rainfall biomes (Fynbos and Succulent Karoo) and on the Nama-Karoo and savanna biomes in the summer rainfall region. It also collaborates widely with a number of research groups in southern Africa, Australia, Europe, the United Kingdom and the United States of America.

Greening the Nation Programme

The Greening the Nation Programme is a Department of Environmental Affairs-funded programme, which started in 2005. It has been implemented by Sanbi in seven provinces, namely Western Cape, Eastern

Cape, Gauteng, Mpumalanga, Free State, Limpopo and the Northern Cape.

Service-providers have been contracted by Sanbi to implement the projects in the various sites at provincial level.

The fundamental duties of the service-providers are:

- the greening of schools with an indigenous garden of no less than 600 m², supplemented by a vegetable garden of no less than 150 m²
- creating jobs for the local community
- developing indigenous gardens and parks in the various communities
- developing useful/medicinal plant nurseries at identified sites in various provinces
- planting street trees
- greening and landscaping community graveyards
- providing training to the workers on the project to ensure that this improves future employment opportunities
- creating and developing local small, medium and micro-enterprises (SMMEs) where the projects are being implemented.

Genetically Modified Organism (GMO) research and monitoring

The GMO Research and Monitoring Unit conducts research and monitoring on the environmental impacts of GMOs in South Africa. This includes research on non-target organisms, target organisms, gene flow and ecological impacts.

South Africa adopted GM crops in 1997, and produces GM maize, soybean and cotton.

Working for Wetlands

In 2009 alone, the Working for Wetlands Project rehabilitated 95 wetlands in all nine provinces and in the process, created employment for more than 1 500 people and 250 small businesses.

The programme is implemented by Sanbi on behalf of the departments of environmental affairs; of agriculture, forestry and



In October 2010, the National Wildlife Crime Reaction Unit was established with the aim of responding to wildlife crimes and more specifically, the upsurge of rhino poaching and the smuggling of rhino horn.

The unit is led by the Department of Environmental Affairs, but includes members from the South African Police Service, the National Prosecuting Authority, South African National Parks and Ezemvelo KwaZulu-Natal Wildlife.

fisheries; and of water affairs. It forms part of the Government's Expanded Public Works Programme (EPWP), which seeks to draw unemployed people into the productive sector of the economy.

National Municipal Biodiversity Programme

Sanbi, in partnership with the former departments of provincial and local government and environmental affairs and tourism, has initiated the National Municipal Biodiversity Programme. The objective of the programme is to ensure that biodiversity and ecosystem services are effectively managed and are contributing to sustainable economic development and human well-being in municipalities across South Africa.

Urban Nature Programme

Urban ecosystems are key to survival and sustainability of the human habitat. Sanbi's Urban Nature Programme engages with ecological science, agencies of local governance and civil society, to promote this environmental perspective.

Urban Conservation is engaged with the implementation of three key projects:

- Cape Flats Nature, which works with the city to engage the communities of Mitchell's Plain, Hanover Park, Manenberg, Macassar, Khayelitsha and Atlantis in care, use and management of biodiversity assets in their neighbourhoods
- Working for Wetlands Peninsula Wetlands Restoration Project, which is a poverty-alleviation and skills-development project within the EPWP
- Green Futures, a horticultural skills-development project.

Bioregional and ecosystem programmes

Sanbi coordinates a number of bioregional and ecosystem programmes. Bioregional programmes are biome-wide biodiversity initiatives that coordinate a wide range of multisectoral projects with integrated conservation and development outcomes.

Sanbi coordinates the Grasslands Programme, the Fynbos Programme, Cape Action for People and the Environment (CAPE), the Succulent Karoo Ecosystem Programme (SKEP) and the Eastern Cape Bioregional Programme.

It also coordinates two ecosystem programmes, namely the Marine Ecosystem Programme and the Freshwater Ecosystem Programme.

Grasslands Programme

The Grasslands Programme is a partnership between government, the private and academic sector, and civil society with the aim of sustaining and securing the rich biodiversity and ecosystem services of the Grassland Biome. The programme provides an enabling environment for mainstreaming biodiversity in production landscapes, including agriculture, forestry, urban development and coal mining.

Cape Action for People and the Environment Programme

CAPE has 23 signatory partners that all aim to conserve and restore the biodiversity of the Cape Floristic Region and the adjacent marine environment, while delivering significant benefits to the people of the region.

CAPE has also enabled donor funding to be channelled into new areas of work and new approaches to conservation, including landscape initiatives, conservation stewardship, business and biodiversity, fine-scale planning, catchment management, conservation education and strengthening institutions.

Succulent Karoo Ecosystem Programme

The succulent Karoo stretches from the Klein Karoo up the west coast through Namaqualand and into Namibia. The biome has a wealth of unique biodiversity but has been severely damaged by human activities such as mining, overgrazing and ostrich farming.

SKEP is a long-term, multistakeholder bioregional conservation and development partnership programme that aims to encourage the people of the succulent Karoo to take ownership of, and enjoy, their unique living landscape in a way that maintains biodiversity and improves livelihoods.

Planning for SKEP started in 2001. From 2003, funding from the Critical Ecosystem Partnership Fund focused on catalysing and programme start-up. From 2009, with the coordination unit housed by Sanbi, SKEP is focused on consolidating its objectives into national and regional government and other programmes and ensuring sustainability.

Conservation International is a key implementation partner of SKEP.

Eastern Cape Bioregional Programme

Sanbi coordinates the Eastern Cape Implementation Committee (ECIC), which is a cooperative governance committee established in partnership with the Eastern

Cape Department of Economic Development and Environmental Affairs. The ECIC is a multistakeholder committee through which participating agencies can coordinate biodiversity-related activities and align environmental, social and economic development goals.

The Mainstreaming Biodiversity into Planning and Development Project is a partnership project aimed at building capacity for Eastern Cape land-use planners and decision-makers. Through this project, Sanbi hosted training workshops to guide the use of the Eastern Cape Biodiversity Conservation Plan in municipal planning processes to support sustainable economic growth.

Marine Ecosystem Programme

The Marine Ecosystem Programme has been a partnership between Sanbi, the World Wide Fund for Nature South Africa (WWF-SA) and Marine and Coastal Management. The programme has focused on its flagship project, the Offshore Biodiversity Initiative, which promotes ecosystem-based management of South Africa's marine territory through the establishment of a network of offshore marine protected areas (MPAs) and cooperative biodiversity management.

Through this initiative, offshore industries, government and civil society are working together to secure the overall health of offshore marine ecosystems to meet the needs of present and future generations.

Freshwater Programme

This programme aims to expand and consolidate the freshwater activities within Sanbi. This includes management of the Working for Wetlands Programme on behalf of the departments of water affairs; of environmental affairs; and of agriculture, forestry and fisheries.

Assessing and monitoring indigenous fauna and flora Biodiversity planning

Sanbi continues to support the initiation and development of provincial biodiversity plans, which are used as the basis for provincial protected area-expansion strategies and the publishing of bioregional plans.

Assessing and monitoring threatened flora and fauna

Sanbi's Threatened Species Programme (TSP) focuses on assessing and monitoring threatened species and includes two subprogrammes: one on the conservation

of threatened plants and the other on the conservation of threatened animals.

The threatened plant component of the TSP has conducted Red List conservation-status assessments of all 20 476 plant taxa in South Africa. Internationally, only 4% of the world's plant species have been assessed. The vast task of assessing South Africa's plants has resulted in an additional 6% of the world's flora being assessed, bringing the total global assessments to over 10%.

The threatened plant monitoring project, Custodians of Rare and Endangered Wildflowers, which involves volunteers from a range of socio-economic and cultural backgrounds in the monitoring and conservation of threatened plants, has expanded with seven new volunteer groups starting in KwaZulu-Natal, Mpumalanga and the Eastern Cape.

The threatened animal component of the TSP coordinates several projects, which aim to capture species-occurrence records for groups of animals through public participation. The information from these projects is used to produce conservation assessments.

Knowledge and information management

Sanbi developed the Knowledge and Information Management Strategy to coordinate and manage all of Sanbi's information resources. The South African Biodiversity Information Facility (Sabif) portal was transferred to Sanbi from the National Research Foundation (NRF). The Sabif includes a network of data-providers and promotes the sharing of data and information under a common set of standards.

Sabif is a network comprising key national partners and stakeholders who provide data through the Sabif portal and the end users of the data. These include museums, herbaria, universities, conservation agencies, government agencies and departments and NGOs.

The Biodiversity Geographical Information System (BGIS) provides access to spatial biodiversity information on the website (<http://sanbi.bgis.org>) to inform biodiversity planning, research and land-use decision-making. Sanbi is mandated with monitoring the status of the country's biodiversity, has developed the National Monitoring and Reporting Framework and identified a set of headline indicators to achieve this. These indicators provide key statistics to give a quantitative measure of the status of various

aspects of biodiversity. Sanbi developed the Species Status Database (<http://www.speciesstatus.sanbi.org>), which provides a centralised storage location for information on the status of South African species.

Protected areas

The CBD, to which South Africa is a signatory, requires that 10% of the terrestrial and 20% of marine biodiversity be conserved by 2010. There are a number of management categories of protected areas in South Africa, which conform to the accepted categories of the International Union for Conservation of Nature (IUCN).

South Africa aims to expand the conservation areas under formal protection from 6% to the international standard of 10% of the total area of the country. The Department of Environmental Affairs has developed mechanisms for the establishment and expansion of protected areas.

The expansion of protected areas is also important within the borders of the country, and a scientifically based expansion plan, the National Protected Area Expansion Strategy has been approved.

This strategy not only focuses on the expansion of the protected area estate on government-owned land, but also on private properties in priority biodiversity areas. The Biodiversity Stewardship Programme is a tool developed to achieve the expansion of the conservation estate on private land as well as the sustainable utilisation of resources in the productive landscape. This programme has already been implemented in two provinces, and another four have established mechanisms for implementation.

The department has committed significant financial resources towards the expansion of formal protected areas, bringing the number of national parks to 18, and the total formal conservation estate to four million hectares. Since 2004, the department has declared four new MPAs, thus increasing the total coastline under protection to 20%.

Scientific reserves

Scientific reserves are sensitive and undisturbed areas managed for research, monitoring and the maintenance of genetic sources. Access is limited to researchers and staff. Examples of such areas are Marion Island and the Prince Edward islands near Antarctica.

Wilderness areas

These areas are extensive in size, uninhabited and underdeveloped, and access is strictly controlled with no vehicles allowed. The highest management priority is the maintenance of the intrinsic wilderness character.

Examples of wilderness areas are the Cederberg Wilderness Area and Dassen Island in the Western Cape, and the Baviaanskloof Wilderness Area in the Eastern Cape.

National parks

South African National Parks (SANParks) promotes the conservation of the country's natural and cultural heritage at local, national and international level, and plays an important role in promoting ecotourism.

South Africa's national parks are the:

- Addo Elephant National Park
- Agulhas National Park
- Augrabies Falls National Park
- Bontebok National Park
- Camdeboo National Park
- Garden Route (Tsitsikamma, Knysna and Wilderness) National Park
- Golden Gate Highlands National Park
- Karoo National Park
- Kruger National Park
- Mapungubwe National Park
- Marakele National Park
- Mokala National Park
- Mountain Zebra National Park
- Namaqua National Park
- Ai-Ais/Richtersveld Transfrontier National Park
- Table Mountain National Park (which incorporates the Cape of Good Hope, Table Mountain and Silvermine nature reserves)
- Tankwa Karoo National Park
- West Coast National Park.

In 2009/10, SANParks recorded a 0,8% growth with an overall occupancy of 73,3%.

The unit nights sold totalled 531 018 compared with the 521 018 sold in 2008/09.



In July 2010, one of South Africa's oldest wine estates, Vergelegen, announced that its Camellia Garden had been recognised by the International Camellia Society. The estate has one of only 17 dedicated Camellia gardens in the world and only two in the southern hemisphere. The Camellia Garden is one of 10 gardens on the estate covering 10 hectares. In recognition of ongoing efforts to restore indigenous fauna and flora on the estate, it was also recognised for being the first champion of the Biodiversity in Wine Initiative.

SANParks flagship project, the Wild Card, continues to be one of the most popular loyalty programmes. In 2009, the organisation sold 105 687 cards.

Efforts to transform the national parks visitors' demographics is continuing to yield good results.

In 2009, 406 085 visitors visited the parks, representing an increase of 17,5% from 2008.

In the 2009/10 financial year, SANParks recorded R598 512 million in tourism income.

Transfrontier conservation areas (TFCAs)

A TFWA is a cross-border region. The conservation status of the areas within a TFWA ranges from national parks, private game reserves and communal natural-resource management areas to hunting-concession areas.

Although fences, highways, railway lines or other barriers separate the constituent areas, they are managed jointly for long-term sustainable use of natural resources. Unlike in transfrontier parks, free movement of animals between the components of a TFWA is not always possible.

TFCAs aim to facilitate and promote regional peace, cooperation and socio-economic development. The success of TFCAs depends on community involvement. In turn, TFCAs are likely to provide local communities with opportunities to generate revenue.

TFCAs are expected to allow tourists easy movement across international boundaries into adjoining conservation areas.

The seven TFCAs are as follows:

- Ai-Ais/Richtersveld TFWA
- Kgalagadi Transfrontier Park
- Kavango-Zambezi
- Greater Mapungubwe (former Limpopo-Shashe) TFWA
- Great Limpopo Transfrontier Park
- Lubombo Transfrontier Conservation and Resource Area
- Maloti-Drakensberg Transfrontier Conservation and Development Area.

Biosphere reserves

The National Environmental Management: Protected Areas Amendment Act, 2004 protects South Africa's biosphere reserves, which are generally formed around existing core conservation areas.

Biosphere reserves exist in partnership with a range of interested land-owners, and can incorporate development, as long as it is

sustainable, while still protecting terrestrial or coastal ecosystems.

The United Nations Educational, Scientific and Cultural Organisation's (Unesco's) Man and the Biosphere Programme addresses the impact of man on the environment by studying the social, ecological and economic implications of biodiversity loss. It then takes steps to minimise this loss through the sharing of knowledge, research and monitoring, education and training and multilateral decision-making.

Biosphere reserves are nominated by their governments for inclusion in the Man and the Biosphere Programme.

Whether they are terrestrial, freshwater, coastal or marine in nature, all are experimental areas where different approaches to integrated environmental management are tested. This is important as it helps to deepen the knowledge of what works in conservation and sustainable development.

South Africa's biosphere reserves include:

- Vhembe, situated in the north-east of Limpopo, includes the northern part of the Kruger National Park; the Makuleke Wetland, which are protected under the Ramsar Convention; the Soutpansberg and Blouberg biodiversity hot spots; and the Makgabeng Plateau, which boasts hundreds of rock-art sites.
- The 100 000-ha Kogelberg Reserve on the country's southern coast sits in the middle of the Cape Floral Region and is home to 1 880 different plant species, 77 of which are found only in this region.
- The Cape West Coast Biosphere Reserve starts in Cape Town in the southern suburb of Diep River and stretches up the west coast as far as the Berg River, encompassing parts of the Cape Floral Region. The reserve includes the Ramsar-protected Langebaan Lagoon as well as Dassen Island, a penguin colony. The Koeberg Nuclear Power Station falls within its boundaries.
- The Cape Winelands Biosphere Reserve includes a part of the Cape Floral Region as well as the wine-growing region. The historic settler-founded towns of Stellenbosch, Paarl and Franschhoek lie here.
- In the northern reaches of South Africa lies the Waterberg Biosphere Reserve, an area of some 400 000 ha in Limpopo. It is an important catchment area for the Limpopo Basin, with four large rivers originating within its borders – the Lephalale, Mokolo, Matlabas and Magalakwena

rivers. San rock art abounds, as does the flora and fauna of the area.

- The Kruger-to-Canyons Biosphere Reserve is so named because it stretches from the Kruger National Park to the Blyde River Canyon. It is an important conservation area in South Africa as it also covers three biomes.

National and cultural monuments

These are natural or cultural features, or both, and may include botanical gardens, zoological gardens, natural heritage sites and sites of conservation significance.

World heritage sites

By August 2010, the World Heritage List included 911 properties forming part of the cultural and natural heritage. These included 704 cultural, 180 natural and 27 mixed properties in 151 state parties. By June 2010, 187 state parties had ratified the World Heritage Convention.

The South Africa World Heritage Convention Committee is responsible for identifying possible world heritage sites in South Africa and coordinating the convention. The World Heritage Convention Act, 1999 (Act 49 of 1999), allows for cultural and natural sites in South Africa to be granted world heritage status. The convention obliges the South African Government to guarantee its implementation, ensure legal protection and develop management plans and institutional structures for periodic monitoring.

The Act makes the principles of the convention applicable to South Africa's world heritage sites, and further provides for the adequate protection and conservation of these sites to promote tourism in a culturally and environmentally responsible way.

South Africa has eight world heritage sites proclaimed by Unesco, namely Robben Island; the iSimangaliso Wetlands Park; the hominid sites at Swartkrans, Sterkfontein and Kromdraai (known as the Cradle of Humankind); the Ukhahlamba-Drakensberg Park (a mixed natural and cultural site); the Mapungubwe Heritage Site; the Cape Floral Kingdom; the Vredefort Dome; and the Richtersveld Cultural and Botanical Landscape.

The Vredefort Dome is an ancient extraterrestrial impact site spanning the Free State and North West provinces. Formed two billion years ago, it is the world's most ancient meteorite impact site and the third-largest, measuring 140 km across.

The world heritage status of Sterkfontein's fossil hominid sites was extended in

July 2005 to include the Taung skull fossil site in North West and the Mokopane Valley in Limpopo.

The Cradle of Humankind has one of the world's richest concentrations of hominid fossils, evidence of human evolution over the past 3,5 million years.

Found in Gauteng and North West, the fossil sites cover an area of 47 000 ha. The remains of ancient forms of animals, plants and hominids are captured in a bed of dolomite deposited around 2,5 billion years ago.

Although other sites in south and east Africa have similar remains, the cradle has produced more than 950 hominid fossil specimens. The Richtersveld Cultural and Botanical Landscape was declared a world heritage site in June 2007. It covers 160 000 ha of dramatic mountainous desert in the north-west of South Africa. It is the only area where the Nama still construct portable rush-covered domed houses, or Iharu oms.

Habitat- and wildlife-management areas

These areas are subject to human intervention, based on research into the requirements of specific species for survival. They include conservancies; provincial, regional or private reserves created for the conservation of species habitats or biotic communities; marshes; lakes; and nesting and feeding areas.

Protected land and seascapes

These areas are products of the harmonious interaction of people and nature, and include natural environments protected in terms of the Environment Conservation Act, 1989 (Act 73 of 1989), scenic landscapes and historical urban landscapes.

Sustainable-use areas

These areas emphasise the sustainable use of protected areas such as the Kosi Bay Lake System in KwaZulu-Natal.

Nature areas in private ownership are proclaimed and managed to curtail undesirable development in areas with high aesthetic or conservation potential.



In April 2010, South Africa hosted the BASIC Ministerial Climate Change meeting in Cape Town. The BASIC group comprises environment ministers from South Africa, India, China and Brazil.

Conservancies are formed to involve the ordinary landowner in conservation. Landowners can establish a conservancy where conservation principles are integrated with normal farming activities.

Wetlands

By February 2010, about 115 000 wetlands covering over four million ha and comprising close to 4% of the country's total surface area were mapped in South Africa. These wetlands are part of the natural infrastructure for gathering, managing and delivering water for human use.

Many wetlands are able to improve water quality, reduce flood impacts, control erosion and sustain river flows. Of special importance is the role wetlands play in ensuring a steady supply of clean water for communities and helping government save hundreds of millions of rands that would be required to set up purification.

In 2010, South Africa designated its 20th wetland of international importance, which was also its seventh in KwaZulu-Natal. The Ntsikeni Nature Reserve, located in an area rich in wetlands, is one of the largest high-altitude wetlands in South Africa and has undergone the least ecological change due to the protective measures in place as a nature reserve.

It is recognised as the second most important breeding site for wattled crane in South Africa, and also as significant to the endangered long-toed tree frog, Oribi, and other wetland-dependent mammals.

Wetlands include a wide range of inland and coastal habitats – from mountain bogs and fens to midland marshes, swamp forests and estuaries, linked by green corridors of stream bank wetlands.

South Africa became a contracting party to the Ramsar Convention in 1975. The country's Ramsar sites include the Nylsvley Nature Reserve; Blesbokspruit; Barberspan; Seekoeivlei; Ukhahlamba-Drakensberg Park; Ndumo Game Reserve; Isimangaliso consisting of Kosi Bay, coastal forest, Lake Sibaya, Sodwana Bay, uMkhuze, False Bay, Charters Creek, Lake St Lucia, Cape Vidal and Mapelane; the turtle beaches and coral reefs of Tongaland; Wilderness lakes; De Hoop Vlei; De Mond State Forest; Langebaan; Verlorenvlei; the Orange River Mouth Wetland; and the Makuleke Wetland.

The IUCN identifies wetlands as the third most important support system on Earth.

The Directorate: Biodiversity Management of the Department of Environmental

Affairs is responsible for the South African Wetlands Conservation Programme. The programme ensures that South Africa's obligations in terms of the Ramsar Convention are met.

The programme aims to protect wetlands in South Africa against degradation and destruction, while striving for the ideal in wise and sustainable use of resources, to ensure that the ecological and socio-economic functions of wetlands are sustained for the future.

South Africa is a member of Wetlands International, an international body dedicated to conserving the world's wetlands.

The Working for Wetlands Programme focuses on wetland restoration, while maximising employment creation; support for SMMEs; and transfer of skills to the beneficiaries of the programme's projects.

World Wetlands Day marks the date of the signing of the Convention of Wetlands on 2 February 1971 in the Iranian city of Ramsar.

Zoological gardens

Established in 1899 and given national status in 1916, the National Zoological Garden (NZG) in Pretoria is the largest zoo in South Africa and probably the only zoo in the world to have been declared a national research facility. It is rated among the top-10 zoos in the world.

It plays a major role in the conservation of wildlife, maintaining one of the largest animal collections in Africa, and is made up of over 7 000 individual animal specimens representing over 600 species.

The species are managed across four sites stretching into the provinces of Gauteng, Limpopo and North West. About 70% of the species are of African origin and 30% of global representation.

As a member of the World Association of Zoos and Aquaria and the African Zoo Association, the NZG participates in several endangered species-management pro-



The Agulhas Biodiversity Initiative and the Biodiversity Conservation and Sustainable Development (BCSD) Project, and two Cape Action for People and the Environment (CAPE) projects, received top ratings for project implementation from the United Nations Development Programme (UNDP) for 2009. These projects were funded by the Global Environment Facility through the World Bank and the UNDP. The South African National Biodiversity Institute's Fynbos Programme provides coordination for both the CAPE partnership and the BCSD Project.

grammes and successfully breeds several endangered species of both continental and global significance.

Among the endangered species the NZG contributes in conserving are the cheetah, rhino, ground hornbills, red-billed oxpeckers and several endangered antelope species. (See Chapter 19: *Science and technology*.)

The 85-ha zoo in Pretoria houses 3 117 specimens of 209 mammal species, 1 358 specimens of 202 bird species 3 871 specimens of 190 fish species, 388 specimens of four invertebrate species, 309 specimens of 93 reptile species, and 44 specimens of seven amphibian species. These figures comprise the animals housed at the zoo in Pretoria as well as at the two biodiversity conservation centres in Lichtenburg in the North West, and Mokopane in Limpopo, and the satellite zoo and animal park at the Emerald Animal World complex in Vanderbijlpark.

The NZG is the largest zoo in the country and more than 600 000 people visit it annually. The total length of its walkways is about 6 km.

An aquarium and reptile park also form part of the zoo facility in Pretoria. The aquarium is the largest inland aquarium in the country.

The Centre for Conservation Science at the NZG will be used as a platform to create awareness and to promote careers in science. The centre's focus on conservation medicine and conservation science places it in the forefront of innovation in zoo-based research.

As a component of the NRF, the centre will afford access to equipment and a well-managed animal collection to the research and student community.

The aim is to build professionals of the future that contribute to biodiversity conservation knowledge on a national and international level. The general public visiting the NZG will also be encouraged to walk through the centre and view researchers at work.

This will enable the NZG to contribute to the mandate of creating an awareness of science and promoting careers in the field.

The centre will also conduct, coordinate and facilitate biodiversity research as a cross-cutting function within the NZG.

It will include research that is conducted on the public interface in cooperation with the commercial services, business development, conservation, education and public-engagement departments. This specific research will enhance the NZG's ability to engage with visitors.

The establishment of the centre marks a milestone in the history of the NZG and places it among a select few zoos that have dedicated research capacity.

The Johannesburg Zoological Gardens, or Johannesburg Zoo, celebrated its centenary in 2004. The core business of Johannesburg Zoo, which is registered as a non-profit company, is the accommodation, enrichment, husbandry and medical care of wild animals.

It is also renowned for its successful breeding programmes involving several endangered South African bird species such as the wattled crane and ground hornbill. The zoo covers 54 ha and houses more than 2 000 animals from 365 species.

Breeding centres

There are a number of game-breeding centres in South Africa. The NZG of South Africa is responsible for the management of the Lichtenburg Biodiversity Conservation Centre, which covers an area of some 6 000 ha, and the Mokopane Biodiversity Conservation Centre, covering an area of 1 333 ha.

The two centres supplement the zoo's breeding programme for various endangered animals, and the zoo's own animal collection.

The Lichtenburg Biodiversity Conservation Centre houses, among other animals, Père David's deer, pygmy hippopotamus, white rhinoceros, the endangered addax, and scimitar-horned and Arabian oryx. Large herds of impala, springbok, zebra, blesbok and red hartebeest also roam the area.

About 32 ha of the wetland area at the centre have been developed into a system of dams and pans, which serve as a natural haven for waterbirds such as spoonbills, kingfishers, ibises and herons.

The Mokopane Biodiversity Conservation Centre is home to an abundance of exotic and indigenous fauna such as lemur, the rare tsessebe, roan antelope and black rhino.

The De Wildt Cheetah-Breeding and Research Centre, situated near Pretoria, is best known for its highly successful captive-



In April 2010, South Africa handed over R40 million to the Kingdom of Lesotho for the development of the Maloti-Drakensberg Trans-frontier Conservation Area.

breeding programme that contributed to the cheetah being removed from the endangered list of the *South African Red Data Book – Terrestrial Mammals* in 1986.

De Wildt also breeds a number of rare and endangered African species. The most spectacular of these is the magnificent king cheetah, which is a true cheetah, but with a variation of coat patterns and colouring. De Wildt also plays a major role in breeding and releasing wild dogs. It has donated breeding nuclei of the highly endangered riverine rabbit and suni antelope to the Kruger National Park.

The De Wildt Vulture Unit is a rehabilitation and holding facility for injured, poisoned and disabled vultures.

The Hoedspruit Endangered Species Centre in Mpumalanga was initially established as a breeding programme for the then endangered cheetah. Following the success of the cheetah-breeding programme, it has evolved into a breeding programme for other endangered African animal species. The centre caters for, among other animals, five species of vulture: Cape griffins, and white-backed, hooded, whiteheaded and lappet-faced vultures. The centre is also known for its wild-dog-breeding programme.

The Hoedspruit Research and Breeding Programme also includes the rare black-footed cat, the vulnerable African wild cat, ground hornbills (in cooperation with the NZG in Pretoria), bald ibis and the endangered blue crane. Elephant, white rhino, buffalo, caracal, Sable antelope, bushbuck and tsessebe have also been cared for and rehabilitated there.

Aquaria

There are well-known aquaria in Pretoria, Port Elizabeth, Cape Town, Durban and East London.

The Aquarium and Reptile Park of the NZG is the largest inland aquarium in Africa, with the largest collection of freshwater fish. It is also the only aquarium in South Africa that exhibits a large variety of marine fish in artificial sea water and the only inland aquarium housing ragged tooth sharks.

The Port Elizabeth Oceanarium is one of the city's major attractions. Exhibits include an underwater observation area, a dolphin research centre, various smaller tanks of 40 different species of bony fish and two larger tanks that display sharks and stingrays. East London has a smaller aquarium.

At the Two Oceans Aquarium situated at the Victoria and Alfred Waterfront, Cape

Town, more than 3 000 specimens represent some 300 species of fish, invertebrates, mammals, birds and plants supported by the waters along the Cape coast.

UShaka Marine World in Durban incorporates both fresh and sea water, and is the fifth-largest aquarium in the world by water volume. It comprises Sea World, Dolphin World, Beach World, and Wet and Wild World.

Sea World incorporates a unique shipwreck-themed aquarium, a penguin rookery and a 1 200-seater dolphin stadium (the largest dolphinarium in Africa).

It also offers edutainment tours and special interactive activities such as snorkelling and scuba diving. In addition, it features a rocky touch-pool, where visitors can touch a starfish or sea cucumber with the help of specially trained guides.

Snake and reptile parks

The Port Elizabeth Snake Park at Bayworld has a wide variety of South African and foreign reptiles, including tortoises, boa constrictors, pythons, crocodiles, lizards and deadly venomous snakes such as cobras, mambas and rattlers. Rare and threatened species, including the Madagascar ground boa, are housed safely in realistically landscaped glass enclosures.

The Aquarium and Reptile Park situated at the NZG in Pretoria houses 80 reptile species from all over the world.

The Hartbeespoort Dam Snake and Animal Park near Pretoria features one of the finest reptile collections in southern Africa. It offers seal shows and snake-handling demonstrations.

The Pure Venom Reptile Farm is one of the largest of South Africa's reptile parks. It is situated inland from Shelly Beach, on KwaZulu-Natal's South Coast.

The CrocRiver Enviro Park, located in Nelspruit, is the largest facility of its type in Africa. The park offers, among other things, turtle, crocodile and fish ponds; and the water- monitor lizard pond; the Desert House, in which a desert-like atmosphere



In May 2010, South Africa repatriated 32 of the black rhino species, *Diceros bicornis michaeli*, which is not indigenous to this country, to Tanzania following a request by the Tanzanian wildlife authorities.

About two decades ago, eight individuals of this rhino species were imported to South Africa. This has led to the alien species becoming a gene pool to restore depleted communities.

was created, and which is home to the reptile gallery where indigenous and exotic reptiles from all over the world are displayed.

Khamai Reptile Park's primary aims are conservation, breeding of endangered reptiles and education. Located outside Hoedspruit, it offers a close-up look at many local as well as exotic snakes, crocodiles and lizards.

Fitzsimons Snake Park is one of South Africa's oldest and most well-known snake parks. The park is located on Durban's Golden Mile. This special snake park is not just a tourist attraction, but the facility is also used to collect venom for the production of anti-snake-bite serum.

Conservation challenges and initiatives

South Africa faces many of the problems experienced by developing countries, in which rapid industrialisation, population growth and urbanisation pose a threat to the quality of the environment. The Department of Environmental Affairs is reforming environmental law to introduce reform in biodiversity conservation, pollution, waste management and environmental planning.

Environmental impact management

South Africa's new environmental impact assessment (EIA) regulations came into effect in August 2010, signalling the start of the official implementation process of a new regime aimed at improving the efficiency and effectiveness of EIA.

The 2010 EIA regulations:

- seek to streamline the EIA process
- introduce an approach where impact on the environment is getting more attention
- introduce a listing notice dedicated to activities planned for predefined sensitive areas.

4x4 regulations

The Strategy Towards Co-Regulation of the Off-Road Sector in South Africa aims to minimise the impact of off-road driving on the environment by giving direction to off-road users and owners to develop and use inland routes in sensitive areas in a responsible manner. This requires drivers and riders to gain competence through appropriate training, off-road guides to be qualified and registered, and trails and tracks to meet specified criteria. The strategy is applicable to the inland recreational use of off-road vehicles, including two-wheel, three-wheel

and four-wheel vehicles, which include 2x4 and 4x4 motor vehicles.

Following the successful implementation of the 4x4 regulations that provide for the controlled use of off-road vehicles in coastal zones, the monitoring of certain stretches of coast has indicated that the banning of off-road vehicles has enabled several shore-breeding birds, especially Damara tern and the African black oystercatcher, to breed successfully on beaches once more.

According to conservationists from Ezemvelo KwaZulu-Natal Wildlife, the number of loggerhead and leatherback turtles hatching successfully on the beaches of northern KwaZulu-Natal has also increased since the ban was enforced.

Coastal management

The Integrated Coastal Management Act, 2008 (Act 24 of 2008), came into operation in December 2009. This is a significant milestone representing the country's first legislative instrument towards a holistic and integrated approach to the conservation and management of the South African coastline.

The purpose of the Coastal Management Act, 2008 is to:

- provide a legal and administrative framework that will promote cooperative, coordinated and integrated coastal development
- preserve, protect and enhance the status of the coastal environment as the heritage that belongs to all
- ensure coastal resources are managed in the interest of the whole community
- ensure there is equitable access to the opportunities and benefits derived from the coast
- give effect to certain of South Africa's international legal obligations.

This Act declares the seashore, coastal waters (including estuaries) and South Africa's territorial seas to be coastal public



The Isimangaliso Wetland Park, a world heritage site that spans 332 000 ha along the north-eastern coast of South Africa, received a US\$9-million grant (about R65,7 million) in March 2010 for empowerment projects in the area. The grant came from the Global Environment Facility through the World Bank.

Isimangaliso, which means "miracle and wonder", contains three major lake systems, eight interlinking ecosystems, 700-year old fishing traditions, most of South Africa's remaining swamp forests, Africa's largest estuarine system, 526 bird species and 25 000 year-old coastal dunes – among the highest in the world.

property. It therefore also requires the State to act as the trustee of coastal public property.

There is recognition of the challenges regarding the management of ocean spaces in South Africa's adjacent ocean areas.

Estuaries, the interface of river and sea water, represent important water bodies crucial for the functioning. Of the 200 estuaries found along the South African coast, 25% are in a degraded state. This degradation is due to inappropriate developments along the banks and in the catchment areas. The department will focus its attention proactively on these degraded systems and will prioritise developing management plans that will seek to improve functioning of estuaries in associated hinterlands.

National Policy for Seals and Seabirds

The National Policy for Seals and Seabirds in South Africa and the National Plan of Action for Seabirds, aimed at reducing the incidental catch of seabirds in longline fisheries, have been finalised.

This follows growing concern over the numbers of seabirds, especially albatrosses, being killed by longline vessels. The plan sets out the required mitigation measures to reduce mortality of seabirds to below an interim target level of 0,05 birds/thousand hooks by South Africa's longline fisheries for hake, tuna, swordfish, Patagonian toothfish and sharks.

South Africa ratified the Agreement on the Conservation of Albatrosses and Petrels (ACAP) in November 2003. It is a multi-lateral agreement that seeks to conserve albatrosses and petrels by coordinating international activity to mitigate known threats to albatross and petrel populations. South Africa played a key role in negotiating the ACAP, and is home to many important populations of these seabirds, including those on the sub-Antarctic Prince Edward islands.

Marine protected areas

MPAs conserve natural environments and assist in the management of fisheries by protecting and rebuilding economically important stocks. Many of the new MPAs will be used to further develop and regulate coastal ecotourism opportunities.

Government shares joint responsibility for South Africa's MPAs with SANParks and Ezemvelo KwaZulu-Natal Wildlife.

In 2009, South Africa proclaimed a new MPA, spanning 180 000 km², around the

Prince Edward islands in the Southern Ocean.

The new preserve, roughly the size of the state of Oklahoma, is to be known as the Prince Edward Islands MPA, and will be South Africa's 21st marine preserve. It will be the fourth-largest ocean preserve on Earth. The new preserve will also be South Africa's first offshore protected area.

In October 2009, South Africa and Mozambique joined forces to create Africa's largest MPA.

Mozambique declared its first MPA at Ponta do Ouro, which links with South Africa's iSimangaliso Wetland Park to create Africa's first transfrontier marine conservation area.

The MPA stretches from St Lucia in KwaZulu-Natal, South Africa, to Ponta do Ouro, Mozambique. The Mozambique MPA, *Reserva Marinha Parcial da Ponta do Ouro*, covers 678 km² and stretches three nautical miles out to sea. It includes the Inhaca and Portuguese islands and the Maputo Special Reserve.

Southern Mozambique is a vital nursery for commercially important fish populations, with fish, larvae and eggs carried in south-flowing currents into South Africa's iSimangaliso Wetland Park.

The protected area also contains sensitive breeding grounds of leatherback and loggerhead turtles, currently threatened by human encroachment and uncontrolled harvesting of their eggs.

Activities such as semi-industrial and industrial fishing, fishing on the coral reefs, fishing with explosives, driving of motorised vehicles on the beach and construction, other than approved developments, are now prohibited in the protected area.

Marine pollution and sustainability

With 80% of the marine pollution emanating from land-based activities, the Department of Environmental Affairs will be implementing the national Programme of Action for land-based sources of pollution, while refin-



The Department of Environmental Affairs launched the Kuyasa Clean Development Mechanism Project in 2009 in Khayelitsha outside Cape Town. The project involves the installation of solar energy heaters, the retrofitting of compact fluorescent light bulbs and the introduction of ceiling insulation. Some 2 000 homes were expected to benefit from this initiative. The project aims to reduce fossil fuel-based consumption, and hence carbon-dioxide emissions.

ing strategies for combating marine pollution from oil spills.

The department has embarked on a process to adopt a new protocol on land-based sources of marine pollution under the amended Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Western Indian Ocean.

South Africa has one of world's busiest shipping routes and has experienced many oil spills over the years. It is estimated that 80% of the world's tanker traffic passes South Africa's coast.

The then Department of Environmental Affairs and Tourism developed the National Contingency Plan for the Prevention and Combating of Pollution from Ships, in consultation with the South African Maritime Safety Authority and the Department of Transport. This includes disposing, recovering or stabilising the spilt oil and rehabilitating the environment.

Sustainable Coastal Livelihoods Programme (SCLP)

The SCLP seeks alternative livelihood options for communities along the South African coast to minimise pressure on marine resources.

Protecting the coastline

To counter illegal activities along the coastline, as well as the country's 1 155 000-km² Exclusive Economic Zone (EEZ), the former Department of Environmental Affairs and Tourism boosted its compliance unit with the appointment of more than 80 fishery-control officers (FCOs) and 100 honorary FCOs, after the implementation of the Honorary FCO Policy. The department also took delivery of four environmental-protection vessels as part of measures to protect marine and coastal resources.

Lillian Ngoyi, Ruth First and Victoria Mxenge patrol up to the 200 nautical-mile limit from the shore. *Sarah Baartman* patrols the most remote reaches of the EEZ and around the Prince Edward islands. The vessels also conduct multilateral patrols in the South African Development Community (SADC) coastal states.

Vessel monitoring

The department is making it obligatory for fishing vessels to have satellite technology on board so that it can monitor their movements. Five coastal nations in the SADC have taken the innovative step of linking their vessel-monitoring systems. South



The National Environmental Compliance and Enforcement Report 2008/09 was released in November 2009. According to the report, 4 661 environmental cases were reported nationally between 1 April 2008 and 31 March 2009. During this period, the total number of criminal dockets registered was 2 412 compared with 1 762 in the previous reporting period.

In May 2010, time slots dedicated to the processing of environmental crimes in the existing courts had been reopened, and launched at the Johannesburg Regional Court in Gauteng. Other pilot sites include Durban Regional Court in KwaZulu-Natal, Nelspruit Regional Court in Mpumalanga and the Hermanus District Court in the Western Cape.

The Department of Environmental Affairs had trained over 300 prosecutors and 200 magistrates on environmental crimes in preparation for this reopening, and distributed prosecutor manuals on environmental crimes to the National Prosecuting Authority.

Africa, Namibia, Angola, Mozambique and Tanzania have signed a memorandum of agreement (MoU) that will allow them to share information about the movement of licensed boats along the southern African coast.

Partnerships

To further counter illegal fishing and corruption, the former Department of Environmental Affairs and Tourism entered into partnerships with a broad spectrum of agencies, including national, provincial and local government, as well as NGOs.

Other important partnerships have been forged with specialised units of the South African Police Service. In addition, SAN Parks and a number of provincial nature-conservation agencies conduct monitoring, control and surveillance activities within the MPAs.

International cooperation

South Africa is a signatory to a range of multilateral agreements related to marine resources and protecting the marine environment. In terms of protecting the marine environment, these include the London Convention on Dumping at Sea; the Marine Pollution Convention; the Antarctic Treaty; the Abidjan Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Regions and Related Protocols; and the Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the East African Region and Related Protocols.

The sustainable use of the oceans is governed by the UN Convention on the Law of

the Sea. South Africa is also a member of several international organisations aimed at the sustainable management of the marine environment, such as the International Marine Organisation and the International Seabed Authority.

West Indian Ocean Land-Based Activities Project (WIO-LaB)

The WIO-LaB Project deals with the protection, prevention and management of marine pollution from land-based activities.

Commitment was given to this project by the main donors, the UN Environmental Programme and the Global Environmental Facility. The Government is assessing the effect that litter from rivers has on the oceans, is raising awareness of and educating communities about the importance of protecting the marine environment from pollution resulting from land-based activities, and has created task teams to deal with municipal water and the physical alteration and destruction of habitats.

Waste management

The department intends to break new ground in the implementation of its waste-management policies and legislation through the implementation of the National Environmental Management: Waste Act (Nemwa), 2008 (Act 59 of 2008). The Nemwa, 2008 came into effect in July 2009. The Act seeks to address the waste challenges by instituting mechanisms of waste avoidance, minimisation, reuse, recycling, recovery, appropriate collection and transport services, and environmentally sound treatment and disposal.

The National Waste-Management Strategy seeks to respond to challenges in respect of specific categories of waste and describes the application of different instruments for each waste category.

A policy that seeks to extend the provision of free basic refuse removal services to indigent families in the country will control the growing number of illegal dumping sites. It was tabled in Parliament in 2010.

In June 2010, the former Minister of Water and Environmental Affairs, Ms Buyelwa Sonjica, launched the National Waste Campaign as part of the World Environment Day celebrations in Soweto. The launch formed part of the programme of the Coca-Cola 2010 FIFA World Cup™ trophy tour.

The campaign is part of the Department of Environmental Affairs' efforts to address waste reduction and preservation of natural habitats, aiming to change society's behaviour towards the environment. The effectiveness of waste reduction, recycling and litter prevention depends to a significant extent on public and consumer awareness and changes in behaviour.

The department and its agencies, Indalo Yethu and Buyisa-eBag, worked on a comprehensive national call of action to the nation to reduce the throw-away culture and create wealth from waste.

The Radioactive Waste-Management Policy is a nuclear waste-management plan and strategy that is being implemented, starting with the creation of the National Committee on Radioactive Waste Management.

The National Radioactive Waste-Management Agency Bill was approved by Cabinet in April 2008.

During the processing of the Bill, the department and the Parliamentary Portfolio Committee agreed that the title of the agency be changed to the National Radioactive Waste Disposal Institute (NRWDI).

The objects of the Bill are to:

- provide for the establishment of the NRWDI
- manage radioactive waste disposal nationally
- manage its functions effectively
- regulate staff matters
- manage all relevant functions.

The establishment of the institute will allow the operators/generators to focus on their core business. However, the generators will remain financially responsible for the disposal of waste.

This institute will be solely responsible for handling radioactive waste disposal, predisposal management and storage at the disposal site.

To measure success on the implementation of policies and strategies, the department has developed a waste-information system that will be implemented nationally. The Waste Act, 2008 makes it mandatory to



In July 2010, the Commission for the Conservation of Antarctic Marine Living Resources (CCAMLR) held two workshops in Cape Town.

South Africa, a full member of the CCAMLR, has long participated in conservation in the area through the South African National Antarctic Programme and the research station on Marion Island.

South Africa contributes data to the CCAMLR on environmental and biodiversity research conducted at Marion Island by the Department of Environmental Affairs. The data relates to understanding the dynamics of climate change in the Southern Ocean, and impacts on marine biodiversity as well as seabird populations and their long-term trends.

report waste information to the waste-information system. This assists the department in tracking progress with implementation of the legislation.

Air-quality management and climate change

Air quality remains an important and challenging environmental issue in South Africa. The legislation governing air-quality management in South Africa is the National Environmental Management: Air Quality Act (AQA), 2004 (Act 39 of 2004). The AQA, 2004 came into full effect in April 2010. In addition, the Department of Environmental Affairs published the 2007 National Framework for Air-Quality Management in South Africa. The national framework is the implementation manual of the AQA, 2004 and it came into effect on 11 September 2007.

Section 21 of the AQA, 2004 requires the Minister of Water and Environmental Affairs or members of the executive councils of the provinces to identify and publish a list of activities, which result in atmospheric emissions and associated minimum emission standards. In compliance with this section, the Minister of Water and Environmental Affairs published a *Government Gazette* (No. 33064, Government Notice No. 248) on 31 March 2010. According to the Section 21 list, such activities include mineral, metallurgical, chemical processing and certain types of waste disposal. In terms of the AQA, 2004, any person conducting a listed activity must apply for an atmospheric emission licence.

Smoke from domestic fires in residential settlements is also a significant source of pollution, particularly in dense, low-income communities. This problem escalates in the winter months as more coal fires are lit for space heating.

In June 2010, the department launched “Basa njengo magogo” (make fire like granny), as part of the “Mollo o Hlwekileng” – Better Environment, Improved Health and Safety Campaign, to change to a method of fire-making that reduces smoke by 80%.

On the occasion of the celebration of the World Meteorological Day on 23 March



In June 2010, the South African Weather Service implemented the South African flash flood guidance system in collaboration with the national Disaster Management Centre to reduce loss of life and property suffered by communities in major flash flood-prone regions.

2010, the department, together with the South African Weather Service, launched the first phase of the South African Air-Quality Information System (Saaqis).

From the end of March 2010, policy-makers and the general public able to access centralised air-quality information through a system aimed at reducing pollution in the country, assessing whether air quality is improving and identifying areas where potential air pollution problems exist.

The system contains the latest updated data of a location and can give the status of air quality or pollution according to the chosen day and time when checked on the website (www.saaqis.org.za).

Reporting stations verify their data before feeding it directly into this web-based interactive air-quality information system.

There are 42 air-quality monitoring stations reporting to the Saaqis. Most of these stations belong to Mpumalanga, ETHEKWINI Municipality, the City of Johannesburg and the City of Tshwane.

Policy-making will for the first time be driven by air-quality information, which will make it possible for air pollution trends to be determined for each area being monitored.

Saaqis is an essential resource for improving the country's air quality. The Chief Directorate: Air-Quality Management and Climate Change aims to set up 18 ambient air-quality monitoring stations that will provide information to the Saaqis.

The second phase of the project commenced in the 2010/11 financial year and focused on the development of emission inventories from sources such as industries, vehicles, households and other significant sources. The third and last phase will focus on air-pollution modelling, which will enable real-time forecasting of air pollution similar to weather forecasting.

The Government and all relevant sectors of society agreed to pursue a required-by-science scenario of the Long-Term Mitigation Scenarios (LTMS) Study in a bid to curb greenhouse gas (GHG) emissions.

Based on the South African LTMS, the different options for climate-change reductions have been assessed and it is acknowledged that energy efficiency is one of the most cost-effective mitigation options in South Africa.

In March 2009, South Africans from all spheres of life came together in Midrand, Gauteng, to initiate a consultative process to develop the South African Climate-Change Response Policy. The Climate-Change

Summit 2009 engaged nearly 900 representatives from government, business, the scientific and academic communities, civil society and over 150 “virtual participants” linked through the Internet.

The summit initiated a participatory national climate-change policy development process.

In line with its commitment to the global effort, South Africa announced that it would take nationally appropriate mitigation actions of a 34% deviation below business as usual emission growth trajectory by 2020, and 42% by 2025. This commitment is neither additional nor extraneous to the LTMS but is conditional to a legally binding international regime and support with regard to means of implementation. The extent to which this action will be implemented depends on the provision of financial resources, the transfer of technology and capacity-building support by developed countries.

Urban environmental management

The Urban Environmental Management Programme (UEMP) is a collaboration between 11 partners from different spheres of the South African Government, working together to improve service delivery to the citizens of South Africa.

The programme aims to alleviate poverty and build capacity for local environmentally sustainable services. It began in April 2006 with a five-year budget of 220 million Danish krone, and is a continuation of more than 10 years of environmental collaboration between South Africa and Denmark.

The South African partners are responsible for the implementation and progress of the programme. Each partner proposes activities in its normal business plan, which is then funded through the UEMP.

The UEMP focuses on the following themes:

- air quality
- environmental health



In October 2010, a delegation comprising senior government officials within the environmental sector from national departments, provincial departments and conservation authorities, led by the Department of Environmental Affairs, attended the 10th meeting of the Conference of Parties to the Convention on Biological Diversity in Nagoya, Japan. South Africa supported recommendations that articulate the role of biodiversity in climate-change mitigation and adaptation.

- sustainable planning
- sustainable energy management
- waste management.

Erosion and desertification

Most South African soil is unstable. The country loses an estimated 500 million ton of topsoil annually through erosion caused by water and wind.

About 81% of the total land area of South Africa is farmed. However, only 70% of this area is suitable for grazing. Overgrazing and erosion diminish the carrying capacity of the veld and lead to land degradation. This process has already claimed more than 250 000 ha of land in South Africa.

The Department of Agriculture, Forestry and Fisheries administers the Conservation of Agricultural Resources Act, 1983 (Act 43 of 1983), in terms of which various measures are being implemented to prevent or contain soil erosion.

In January 1995, South Africa signed the United Nation Convention to Combat Desertification (UNCCD), which was ratified on 30 September 1997. The main objectives of the convention include cooperation between governments, organisations and communities to accomplish sustainable development, especially where water resources are scarce.

The convention aims to support member countries in Africa to prevent desertification and its consequences. These countries support one another at technical and scientific level, as they share similar climatic conditions.

South Africa also acts as coordinator for the Valdivia Group for Desertification.

The group consists of countries in the southern hemisphere, namely Australia, New Zealand, Argentina, Chile, Uruguay, South Africa and Brazil, whose aim it is to, among other things, foster scientific and technological cooperation.

The country has introduced legislation such as the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004), to promote the conservation of biodiversity, and fight desertification and land degradation.

As part of the UN international campaign to tackle global environmental deterioration and in particular combating dry lands degradation, which cover up to one-quarter of the world's land surface, the UN has designated 17 June as the “World Day to Combat Desertification.” The celebration of this day

marks the anniversary of the adoption of the UNCCD.

The 2010 theme of the World Day to Combat Desertification was *Enhancing Soils Anywhere, Enhance Life Everywhere*, in line with the international year dedicated to biodiversity. With this theme, the UNCCD aimed to sensitise the public to the fact that desertification, land degradation and drought dramatically affect the biodiversity resident in soil.

Recycling

The Department of Environmental Affairs has an MoU with the Glass-Recyclers Association of South Africa.

In August 2009, the Glass Recycling Company installed over 800 new glass banks in South Africa in a bid to increase the recycling of waste glass. The new glass banks were in addition to the 550 banks already in use in the country. As consumers are embracing glass-recycling habits, this is contributing to the need for even more glass drop-off points.

Since the inception of the Glass Recycling Company in 2006, South Africans have increased the recycling of waste glass from 148 000 tons to more than 204 000 tons per year. This is effectively an increase of just over 38%.

Collect-a-Can was established in 1993. It is a joint venture between ArcelorMittal South Africa, which is Africa's major steel producer and producer of tinfoil for food and beverage cans and Africa's largest packaging company and beverage can producer, Nampak.

The current recovery rate for southern Africa is 69%, which compares favourably with recovery rates quoted by first world countries.

In 2010, Collect-a-Can won the *Mail & Guardian* Greening the Future Award for Best Environmental Practice and Sustainability.

Collect-a-Can annually embarks on various projects which run throughout the year. The biggest project is the schools' competition, a project which aims to encourage, educate and inform children on the importance of a clean environment and how such an environment can be achieved through recycling waste such as used beverage cans. The company works within communities to support recycling initiatives, and has a strong commitment to socio-economic empowerment.

International cooperation United Nations Framework Convention on Climate Change (UNFCCC)

South Africa ratified the UNFCCC in 1997. The convention is a global commitment to take collective responsibility for climate change, and is a mandate for action to address the problem.

The convention was signed at the Rio Earth Summit in 1992 by heads of state and other senior representatives from 154 countries (and the European Community), and came into effect on 21 March 1994.

Since mid-1998, some 175 states have ratified or acceded to the convention.

The objective of the convention is to stabilise GHG concentrations in the atmosphere at a level that will not have an adverse effect on the climate.

The convention aims to control this level over a period of time to:

- allow ecosystems to adapt naturally to climate change
- ensure that food production is not threatened
- enable economic development to proceed in a sustainable manner.

All countries that have ratified the convention are required to:

- develop, update and publish national inventories of anthropogenic emissions by sources, and removals by sinks of GHG (the GHG excludes those listed in the Montreal Protocol)
- formulate, implement and update national and regional programmes containing measures to mitigate climate change
- promote and cooperate in the development and transfer of technology that controls, reduces or prevents anthropogenic emissions of GHG
- promote sustainable management, conservation and enhancement of sinks and reservoirs of GHG
- cooperate in preparing for the adaptation to the impact of climate change
- take climate-change considerations into account where feasible, in relevant social, economic and environmental policies and actions, to minimise the adverse effects of climate change on the economy, on public health and on the quality of the environment
- promote and cooperate in the timely and transparent exchange of information, including scientific, technological, socio-economic and legal information and research

- promote and cooperate in education, training and public awareness
- report to the Conference of the Parties (COP).

Commission on Sustainable Development (CSD)

The CSD was created in 1992 to monitor and report on implementation of the Earth Summit agreements at local, national, regional and international levels. Its mandate was reaffirmed by the WSSD held in Johannesburg in 2002.

At its 11th session, the CSD drafted a multi-year programme of work organised on the basis of two-year cycles, with each cycle focusing on selected thematic clusters of issues. Year one of the cycle is a reviewing year that evaluates progress made in implementing sustainable development goals and identifying obstacles and constraints to implementation. During year two, policy actions are negotiated, aimed at addressing the challenges and constraints.

South Africa has actively participated in the CSD process. The drafting of the South African country report to CSD-18 highlighted the status of implementation with regard to the themes of mining, transport, sustainable consumption and production, waste and chemicals, as well as the challenges faced in achieving the targets set out in the Johannesburg Plan of Implementation (JPol).

The report further covered the cross-cutting issues and means of implementation inclusive of technology, finance and capacity-building. The cross-cutting issues covered poverty, gender mainstreaming as well as interlinkages across the themes. South Africa participates in the negotiating session of the CSD to ensure that policy decisions are adopted that will expedite implementation of the thematic targets set in the JPol.

Convention on International Trade in Endangered Species (Cites)

Unregulated trade in wildlife has become a major factor in the decline of many species of animals and plants. In 1975, Cites was established to prevent international trade from threatening species with extinction.

South Africa, together with the other 149 member countries, acts by regulating and monitoring international trade in species which are, or may be, affected by this trade.

Montreal Protocol

According to the UN Environment Programme (UNEP), global emissions need to be cut by between 48% and 72% between 2020 and 2050 to create a 50/50 chance of meeting the target of keeping global temperature increases below 2° C. The Montreal Protocol on Substances that Deplete the Ozone Layer (a protocol to the Vienna Convention for the Protection of the Ozone Layer) is an international treaty designed to protect the ozone layer by phasing out the production of a number of substances believed to be responsible for ozone depletion. It is believed that if the international agreement is adhered to, the ozone layer will recover by 2050.

South Africa became a signatory to the Montreal Protocol in 1990 and has a national obligation to safeguard the ozone layer from depletion. South Africa has phased out chlorofluorocarbons, halons, methyl chloroform and carbon tetrachloride – making it the only developing country in the world that has achieved so much in line with the phase-out schedule for developed countries. Although South Africa is classified as a developing country, its consumption of these substances is equal to that of some developed countries.

To demonstrate the country's commitment towards the phasing out of ozone-depleting substances (ODS), the following control measures constitute the overall position of South Africa on the Montreal Protocol:

- working groups were constituted to assist government in implementing the protocol
- regulated ODS can only be imported or exported after applying for an import/export permit through the Department of Trade and Industry under the Import and Export Control Act, 1963 (Act 45 of 1963)
- ODS can only be imported after the department has recommended the issuing of a permit to the International Trade



South Africa and Australia have signed an agreement that will frame future bilateral cooperation on climate-change issues.

A Letter of Intent was signed in February 2010 by the Australian Trade Minister, Mr Simon Crean, and the former Minister of Water and Environmental Affairs, Ms Buyelwa Sonjica.

The two nations have been cooperating on climate-change matters since 2006.

Both countries agreed to identify as well as to develop and implement a further programme of joint activities such as addressing climate change and biodiversity, greenhouse gas emissions and reporting and monitoring at national and entity levels.

Administration Commission/Department of Trade and Industry

- information is disseminated to interested and affected parties
- Africa network meetings, as arranged by the UNEP, are attended, where views, experiences and problems are shared to improve cooperation within the region and as per New Partnership for Africa's Development requirements.

Obligations include:

- ensuring that South Africa, as a party to the protocol, protects human health and the environment against harm from human activities that modify or are likely to modify the ozone layer
- ensuring the protection of the ozone layer by taking precautionary measures to equitably control total global emissions of substances that deplete the ozone layer, with the ultimate objective of totally eliminating them
- reporting data to the Ozone Secretariat on production, imports, exports and consumption of regulated ODS as collected from dealers and relevant departments.

The former Department of Environmental Affairs and Tourism, with the assistance of the former Department of Agriculture, embarked on a national project to establish methyl bromide (MBR) consumption trends, and a database of suitable, feasible and economically viable alternatives to MBR.

This will form the basis for an intensive research/evaluation project to phase out, in the short term, 20% of MBR usage, mainly in the agricultural sector. From January 2005, all developing countries were to have reduced their respective MBR consumption by 20%, as per the Montreal Protocol phase-out timetable, and completely phase out the use of MBR by 2015.

The department has also begun a programme to phase out the consumption of

hydro chlorofluorocarbons (HCFCs), which will commence in January 2013. The Phase-Out Management Plan had been developed to define specific activities necessary to achieve the control measures envisaged in 2013 and 2015.

Both the HCFCs and MBR are to be declared, by the Minister, as national priority air pollutants in terms of Section 29(1) of the National Environmental Management Air-Quality Act, 2004.

Private-sector involvement

Numerous private bodies are involved in conservation activities. There are more than 400 organisations in the country concentrating on conservation, wildlife and the general environment, as well as more than 30 botanical and horticultural organisations.

Among these are:

- BirdLife South Africa
- Botanical Society of South Africa
- Centre for Rehabilitation of Wildlife
- Conservation International
- Delta Environmental Centre
- Dolphin Action Protection Group
- EcoLink
- Endangered Wildlife Trust
- Ezemvelo KZN Wildlife
- Green Trust
- Keep South Africa Beautiful
- KwaZulu-Natal Sharks Board
- National Conservancy Association of South Africa
- Peace Parks Foundation
- Southern African Foundation for the Conservation of Coastal Birds
- Trees and Food for Africa
- Wildlife and Conservation Society of South Africa
- WWF-SA.

Acknowledgements

Business Report

Department of Environmental Affairs

Estimates of National Expenditure, 2010, published by National Treasury

DEAT Annual Review 2008/09

BuaNews

Beeld

National Zoological Gardens of South Africa

South African National Biodiversity Institute

www.bwi.co.za

www.capeaction.org.za

www.cites.org

www.collectacan.co.za

www.csir.co.za

www.deat.gov.za

www.dwaf.gov.za

www.ekapa.ioisa.org.za

www.gov.za

www.nzg.ac.za

www.peaceparks.org

www.plantzafrica.com

www.sacanegrowers.co.za

www.sagoodnews.co.za

www.sanbi.org

www.skep.org.za

www.southafrica.info

www.ucmp.berkeley.edu

<http://eprints.ru.ac.za>

<http://en.wikipedia.org>

Suggested reading

- Aucamp, PJ. 2009. *Environmental impact assessment: a practical guide for the discerning practitioner*. Pretoria: Van Schaik.
- Butchart, D. 2009. *Wildlife of South Africa: a photographic guide*. Cape Town: Struik Nature.
- De Villiers, B. 2008. *People and parks: sharing the benefits*. Johannesburg: Konrad Adenauer Stiftung.
- Du Plessis, A. 2008. *Fulfilment of South Africa's constitutional environmental right in the local government sphere*. Nijmegen: Wolf Legal.
- Emmett, M. 2010. *Game ranger in your backpack: all-in-one interpretative guide to the Lowveld*. Pretoria: Briza.
- Environmental compliance and enforcement in South Africa: legal perspectives*. 2009. Cape Town: Juta.
- Environmental management in South Africa*. 2009. Cape Town: Juta.
- Guyot, S. 2008. *Zulu shores, South Africa: green disputes in black and white*. Saarbrücken: VDM, Verlag Dr. Müller.
- McCracken, DP. 2008. *Saving the Zululand wilderness: an early struggle for nature conservation*. Auckland Park: Jacana.
- Pienaar, A. 2009. *The Griqua apprentice: ancient healing arts of the Karoo*. Roggebaai: Umuizi.
- Selley, R. 2009. *West of the moon: early Zululand and a game ranger at war in Rhodesia*. Johannesburg: 30° South Publishers.
- Slingsby, P. 2009. *T.P. Stokoe, the man, the myths, the flowers*. Cape Town: Baardskeerder.
- South Africa. 2009. *National Environmental Management Act and regulations 107 of 1998; Environment Conservation Act and regulations 73 of 1989*. Edited by Juta's statutes editors. Cape Town: Juta.
- South African environmental law through the cases*. 2009. Durban LexisNexis.
- Thomas, V, Moll, E & Grant, R. 2008. *Tree spotting: Cape: from coast to Kalahari*. Johannesburg: Jacana.

