

Environment



The South African Government remains committed to find solutions to the problem of global warming, as its effects will be felt particularly by the developing countries.

South Africa participated in the World-Wide Fund Living Plan Conference, which took place in Johannesburg in November 2013.

Government's focus on the green economy was the basis for a lot of policy positioning in the country's economic cluster.

Although it has a land surface area of only 1,2 million km² representing just 2% of the Earth's total land surface, South Africa contains almost 10% of the world's total known bird, fish and plant species, and more than 6% of the world's mammal and reptile species.

Government is committed to protecting the country's rich biodiversity heritage for the benefit of all, and creating a prosperous and equitable society that lives in harmony with its natural resources.

The Department of Environmental Affairs (DEA) is mandated to formulate, coordinate and monitor the implementation of national environmental policies, programmes and legislation. Strategies are, therefore, in place to:

- protect, conserve and enhance the environment, and natural and heritage assets and resources
- plan, manage and prevent pollution and environmental degradation to ensure a sustainable and healthy environment
- provide leadership on climate-change adaptation and mitigation
- contribute to sustainable development, livelihood, and green and inclusive economic growth by facilitating skills development and job creation
- contribute to a better Africa and a better world by advancing national environmental interests through a global sustainable development agenda.

Budget and funding

For the 2013/14 to 2015/16 period, R75 million was allocated to South African National Parks (SANParks) for the purpose of combating rhino poaching.

During 2013/14, the environmental protection and infrastructure programmes received R817 million.

The department accessed R2,39 billion from the Expanded Public Works Programme (EPWP) for its environmental programmes in 2013, which boosted government's job-creation objective and secure vital environmental benefits from the work to be done.

During 2013/14, the department spent over R1,13 billion on the Working for Water and

associated programmes, while Working on Fire received R406 million, and the Environmental Protection and Infrastructure Programmes received R817 million.

The biggest budget allocations went towards the Eastern Cape and SANParks projects and the SANParks budget included funding for the Eco-Furniture Factories.

Legislation and policies

The framework within which the department fulfils its mandate is guided by a number of policies and legislation.

- The National Environmental Management Act (Nema), 1998 (Act 107 of 1998); the National Environmental Management Amendment Act, 2003 (Act 46 of 2003); the National Environmental Management Amendment Act, 2004 (Act 8 of 2004); the National Environment Laws Amendment Act, 2008 (Act 44 of 2008); the National Environmental Management Amendment Act, 2008 (Act 62 of 2008), and the National Environment Laws Amendment Act, 2009 (Act 14 of 2009) establish the concepts of participatory, cooperative and developmental governance in environmental management, as well as principles for environmental management and provides for structures to facilitate these.
- The National Environmental Management: Biodiversity Act (NEMBA), 2004 (Act 10 of 2004), reformed South Africa's laws regulating biodiversity. It sets out the mechanisms for managing and conserving South Africa's biodiversity and its components; protecting species and ecosystems that warrant national protection; the sustainable use of indigenous biological resources; the fair and equitable sharing of benefits arising from bioprospecting, including indigenous biological resources; and the establishment of the South African National Biodiversity Institute (Sanbi).
- The National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003) provides for the protection and conservation of ecologically viable areas, the establishment of a national register of protected areas, as well as the proclamation and management of these areas.
- The National Environmental Management: Protected Areas Amendment Act, 2009 (Act 15 of 2009) provides for the assignment of national parks, special parks and heritage sites to SANParks.
- The National Environmental Management: Protected Areas Amendment Act, 2004 (Act 31 of 2004) provides for a national system of protected areas in South Africa as part of a strategy to manage and conserve the country's biodiversity.

- The National Environmental Management: Air Quality Act (AQA), 2004 (Act 39 of 2004) reforms the law regulating air quality to protect the environment by providing reasonable measures for the prevention of pollution and ecological degradation and for securing ecologically sustainable development.
- The National Environmental Management: Integrated Coastal Management Act, 2008 (Act 24 of 2008) establishes a system of integrated coastal and estuarine management in the country, ensuring socially and environmentally responsible development and use.
- The National Environmental Management: Waste Act, 2008 (Act 59 of 2008) reforms the law regulating waste management to protect health and the environment.
- The World Heritage Convention Act, 1999 (Act 49 of 1999) provides for the cultural and environmental protection and sustainable development of, and related activities in a world heritage site.
- South African Weather Service (SAWS) Act, 2001 (Act 8 of 2001).
- Sea Shores Act, 1935 (Act 21 of 1935).
- Sea Birds and Seals Protection Act, 1973 (Act 46 of 1973).
- Dumping at Sea Control Act, 1980 (Act 73 of 1980).
- Sea Fishery Act, 1988 (Act 12 of 1988).
- Antarctic Treaties Act, 1996 (Act 60 of 1996).
- Marine Living Resources Act, 1998 (Act 18 of 1998).
- Prince Edward Islands Act, 1948 (Act 48 of 1948).

Other policy frameworks include:

- The *White Paper on National Climate Change Response, 2011*.
- The *White Paper on Integrated Pollution and Waste Management, 2000*.
- The *White Paper on Environmental Management, 1998*.
- The *White Paper on Conservation and Sustainable Use of Biodiversity, 1997*.
- The *White Paper for Sustainable Coastal Development in South Africa, 2000*.

During 2013, the following legislation was amended or pending promulgation:

- Draft regulations on the format of the atmospheric impact report.
- Draft notice on the amendment of the national list of activities, which result in atmospheric emissions which have or may have a significant detrimental effect on the environment, including health, social, economic and ecological conditions or cultural heritage published for public comment.
- Draft notice on the declaration of small boilers as controlled emitters published for public comment.

- Draft national dust control regulations published for public comment.
- Under section 62 of the NEMBA of 2004, the summary of the non-detriment findings made by the Scientific Authority published for public comment.
- The Biodiversity Management Plan for *Pelargonium sidoides*.
- Under section 97 of the NEMBA of 2004, the Regulations related to listed Threatened or Protected Species were published for public comment.
- The National Environmental Management Laws Amendment Act, 2013 (Act 14 of 2013).
- The National Environmental Management: Air Quality Amendment Act, 2014 (Act 20 of 2014).
- The National Environmental Management: Waste Amendment Act, 2014 (Act 26 of 2014).
- The National Environmental Management: Protected Areas Amendment Act, 2014 (Act 21 of 2014).
- In terms of section 97 of the NEMBA of 2004, the Draft Regulations for the Registration of Professional Hunters, Hunting Outfitters and Trainers were published for public participation.
- The Waste Classification and Management Regulations and the Norms and Standards for the Assessment of Waste for Landfill and the Norms and Standards for the Disposal of Waste to Landfill were published.

National Framework for Sustainable Development (NFSD)

In 2008, Cabinet approved the NFSD, which signalled a new line of thinking to promote the effective stewardship of South Africa's natural, social and economic resources. Cabinet approved the National Strategy for Sustainable Development and Action Plan (NSSD 1, 2011 – 2014) in November 2011, with an implementation time frame of 2011 to 2014.

The NSSD 1 builds on the 2008 NFSD, as well as several initiatives that address issues of sustainability in South Africa, and marks the continuation of a national partnership for sustainable development. The 1992 Rio Earth Summit, followed by the 2002 Johannesburg World Summit on Sustainable Development (WSSD), provided a platform to learn and begin to implement sustainability practices.

The WeedBuster campaign is linked to the invasive plant control initiatives and is part of the Department of Environmental Affairs' Working for Water Programme, which is the largest public-funded initiative aimed at managing invasive alien plants in the world. The programme seeks to control the problem of invasive alien species, and create work opportunities for previously unemployed people.

Rhino Issue Management Report (RIM)

In July 2013, the DEA released the RIM Report, which emanated from the national consultation process to facilitate a common understanding of the key issues related to the protection and conservation of South Africa's rhino population.

The final report submitted to the Minister and DEA in January 2013 assisted the department in reviewing and updating its rhino response strategy outlined in the National Strategy for the Safety and Security of the Rhinoceros Population of South Africa.

The RIM report incorporates opinions on sustainable rhino conservation by acknowledged rhino specialists, ecologists and a range of other experts. It encapsulates viewpoints from non-government organisations both specialised and community-based, civil society, traders, professional hunters, resource economists and ordinary citizens with a deep concern for the ethical and humane treatment of animals. The report focuses on three areas:

- conservation of the rhino
- safety and security of rhino
- commerce and trade.

Mining and Biodiversity Guideline

The Mining and Biodiversity Guideline: Mainstreaming Biodiversity into the Mining Sector, launched in May 2013, is a product of the collaboration between the South African Mining and Biodiversity Forum, the DEA and the Department of Mineral Resources. The guideline seeks to find a balance between economic growth and environmental sustainability and is a key outcome of the Outcome 10 Delivery Agreement.

The *Life: State of Biodiversity Report* is symbolic of the culmination of 100 years of science in assessing biological resources and highlighting the status of water resources in the country.

The launch of the report in May 2013, in Kirstenbosch, Cape Town, coincided with the United Nations' (UN) International Day for Biological Diversity (IDB) aimed at creating awareness of the importance of biodiversity. The theme for the 2013 celebration of IDB was "Water and Biodiversity – Water is essential for life." The key points in the report are:

- Dynamite in a small package: wetlands, which make up only a little over 2% of the country's footprint, perform irreplaceable functions, such as purifying water and slowing down flood waters. Many wetlands have already been lost; of those which remain, nearly half are endangered.
- Protect water factories: areas with high natural runoff, such as the Drakensberg, the

Soutpansberg and the Wolkberg in Limpopo gather and channel the water, which the semi-arid country depends on. Only about a fifth of these areas are formally protected.

- Treasure the small tributaries: all those smaller rivers, which feed into the country's main, arteries such as the Orange and the Vaal rivers, are needed to keep water supplies in good health.
- Paving over the coast: nearly a fifth of the coastline has some form of development within 100 m of the shoreline, which means nature's buffers against storm surges and rising seas may have been stripped away and paved over in parts. This puts people and property at risk in the face of climate change. Coastal and inshore ecosystems are more threatened than offshore marine ecosystems.
- Lost at sea: further out to sea, offshore ecosystems are the most poorly protected of all South Africa's ecosystems. Yet, these are the lifeblood for healthy and productive fisheries. Marine protected areas (MPAs) are essential for keeping both the ecosystems and the fisheries safe.
- Hand-in-hand – State meets the private sector: biodiversity stewardship programmes, where private landowners enter into an agreement with State conservation bodies to protect a section of their land and biodiversity, are making headway, in terms of national protected area targets. This is more affordable than when the State buys land for conservation purposes. With modest increases in resources, this scheme could make an even larger contribution.
- Warning signs: some parts of the country have lost more natural habitat than others. If Gauteng, KwaZulu-Natal and North West keep losing natural landscapes to cultivation, mining and urban expansion at the current rate, these provinces will have almost no natural habitat left outside protected areas by 2050. Where natural vegetation is being converted to other land uses at a high rate, it's important to use maps of biodiversity-priority areas to guide decisions about where best to locate development.
- Planning for an uncertain climate: with an uncertain and extreme climate in the future natural habitats should be kept healthy so they can support functional, stable landscapes in the long term, which can then better support human activities. Scientists have drawn up a new national map, which identifies areas that are important for climate change resilience and need to be kept intact.
- Protecting natural medicines: South Africa has over 2 000 plant species that are used for

medicinal purposes, about a third of which are traded commercially; some are threatened.

- A bridgehead against invasion: invasive alien plants increased their footprint in South Africa in about a decade. The country loses about R6,5 billion worth of ecosystem services to them each year.
- Having the right tools for the job: scientists have made great strides in mapping and classifying South Africa's ecosystems. This has provided the foundation for meaningful assessment, planning and monitoring of ecosystems. For example, the first maps by which to identify marine and coastal habitat types and wetland ecosystem types have been completed.

Projects, programmes and initiatives

South Africa's Green Economy Modelling Report

Focusing on four of the nine focus areas of a green economy (natural resource management, agriculture, transport and energy), the report explores the question of whether equal or higher growth could be attained with a more sustainable, equitable and resilient economy.

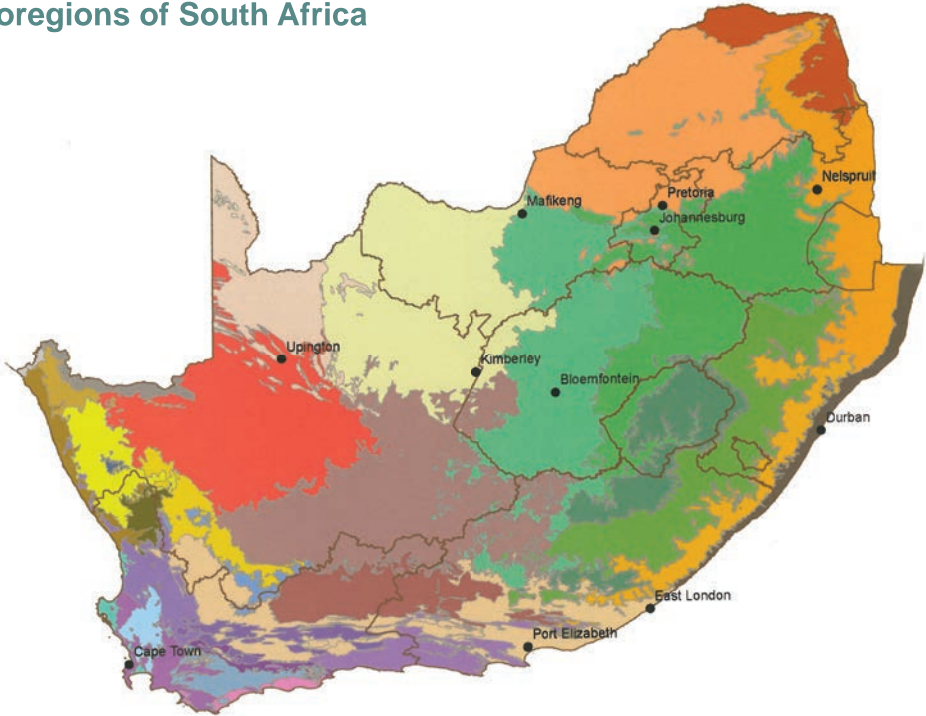
As a developing country, South Africa is an emerging market with an abundant supply of natural resources, ranking as the third most mega-diverse country in the world. As such, there is a need to balance economic and other development goals with those of environmental preservation.


































This was the aim of the first national green economy summit that was held in May 2010, which necessitated the development of the *Green Economy Modelling Report* launched in 2013. In partnership with the UN Environment Programme (Unep) and with support from the UN Development Programme (UNDP), the Department of Environmental Affairs embarked on developing a green economy model for South Africa. The report process was initiated at the UN Framework Convention on Climate Change (UNFCCC) COP17 in December 2011, and is based on the same model underpinning the *2011 Unep Green Economy Report*.

South African Carbon Disclosure Project (CDP)

According to the *CDP Report* of November 2013, leading South African corporates performed well ahead of the global norm in reporting their carbon emissions, with 83 of the companies making up the JSE 100 participating in the seventh edition of the CDP – the second-highest response rate after Europe, where 90% of companies responded.

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 |
|  Dry Highveld Grassland 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*

Fears are increasing over future climate change impacts with more extreme weather events.

There is also growing corporate awareness of the need to assess physical risks posed by climate change and to build resilience.

For investors, the risk of stranded assets has been brought to the fore by the work of Carbon Tracker. They calculate around 80% of coal, oil and gas reserves are unburnable, if governments are to meet global commitments to keep the temperature rise below 2°C. This has serious implications for institutional investors' portfolios and valuations of companies with fossil fuel reserves. The performance is higher than the 81% of the Global 500 sample and well ahead of the Brazil-Russia-India-China-South Africa (BRICS)-bloc counterparts, with 56% of the Brazil 80, 19% of the China 100, 27% of the India 200 and 18% of the Russia 50 responding.

Role players South African National Biodiversity Institute

In support of the National Development Plan (NDP), government was working through Sanbi to spearhead an innovative programme of work on analysing ecological infrastructure and costing natural capital. This body of knowledge will empower the department to make informed development-related decisions.

In June 2013, South Africa launched a R300-million training, mentoring and workplace-based learning project aimed at building a pool of young, capable professionals for the country's biodiversity and natural resource management sector.

The Groen Sebenza Project aims to develop skills while bridging the gap between education and job opportunities in South Africa's green economy. Spearheaded by Sanbi, the innovative project will see 800 unemployed graduates and matriculants being placed in skilled biodiversity jobs in both the public and private sector for a period of two-and-a-half years.

The practical workplace experience and training will, it is hoped, kick-start their careers in a fast-growing industry. The project is sponsored by the Government's Jobs Fund, which is administered by the Development Bank of Southern Africa.

Sanbi is a respected authority in research and has an unmatched research record in the indigenous, naturalised and alien flora of southern Africa and beyond. Its research management covers systematics and collections expansion, conservation and applied biodiversity science, and climate change. Sanbi is also responsible for ensuring that biodiversity knowledge influences policy, management and decision making.

Its biome programmes, which focus on South Africa's biodiversity hotspots, 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.

Sanbi is increasingly embracing biodiversity in its broadest sense through the inclusion of the country's fauna as part of its taxonomic research mandate. It is coordinating a catalogue of all South Africa's species (at least 100 000), including animals, through the South African Tree of Life Project.

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

Sanbi is South Africa's official body for facilitating access to the Adaptation Fund, set up to help developing countries cope with climate change. It was established by the parties to the Kyoto Protocol of the UNFCCC to finance concrete adaptation projects and programmes in developing countries that are parties to the protocol.

iSimangaliso Wetland Park Authority

The Lake St Lucia System is the most important estuary and a key nursery for fish on the

Important dates on the world's environmental calendar

2 February	World Wetlands Day
20 March	Earth Day
22 March	World Water Day
23 March	World Meteorological Day
27 March	Earth Hour
22 April	Earth Day
22 May	International Day for Marine Biological Diversity
5 June	World Environment Day
8 June	World Oceans Day
17 June	World Day to Combat Desertification
5 – 11 September	World Water Week
16 September	International Day for the Protection of the Ozone Layer
18 September	International Coastal Clean-up Day
22 September	World Car-Free Day
5 October	World Habitat Day
11 December	International Mountain Day

southeast African coast. For six decades St Lucia received too little fresh water, due to human interventions and drought, leaving this flagship estuary in poor condition and closed to the sea for much of the past 10 years. Work has begun on restoring St Lucia back to health, a top priority for the iSimangaliso Wetland Park Authority, but it is challenging and will take time. Significantly, in July 2012 the lake received enough fresh water to open to the sea again.

As an area of exceptional and outstanding universal heritage significance, the iSimangaliso Wetland Park was named South Africa's first World Heritage site in December 1999.

The park has received recognition under three of four natural criteria recognised by the World Heritage Convention: it has outstanding examples of ecological processes, superlative natural phenomena and scenic beauty, and exceptional biodiversity and threatened species.

iSimangaliso is located in one of South Africa's poorest rural areas and has been largely under claim. All but three of the land claims settlements have been concluded and a series of co-management agreements have been signed with land claimants. The management of such a diverse asset in an area of extreme poverty and high expectations requires an adaptive and inclusive approach.

South African Weather Service (SAWS)

The SAWS provides useful and innovative weather, climate and related products and services by:

- enhancing observational data and communications networks
- developing and managing talent within the sector
- enhancing collaborative partnerships and disseminating weather services products to their users
- using cutting edge technology to convert data into meaningful products and services for risk mitigation
- advancing the science of meteorology, research and relevant applications
- enhancing fiscal discipline and resource mobilisation to ensure sustainability.

In its continued efforts to carry out its legal mandate, the work of SAWS is guided by four key strategic goals:

- ensuring the continued relevance of the organisation in delivering meteorological - related products and services in compliance with all applicable regulatory frameworks
- ensuring effective management of stakeholder, partner and key client relations
- addressing the short-term viability and long-term sustainability of the entity's revenue and ensuring continued fiscal discipline
- ensuring the availability of strategy-driven human capital capacity for the performance of the SAWS.

Environmental resources

National botanical gardens

Sanbi manages the 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, which collectively attract over a 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 national botanical gardens are natural escapes close to some of the country's urban centres, offering visitors a taste of the country's uniquely rich and colourful biodiversity. They feature facilities such as restaurants, function rooms and conference venues and include activities such as hikes, picnics and shopping.

The botanical gardens are:

- Kirstenbosch, Cape Town
- Pretoria
- Harold Porter, Betty's Bay
- Walter Sisulu, Roodepoort
- Hantam, Nieuwoudtville
- Free State, Bloemfontein
- Karoo Desert, Worcester
- KwaZulu-Natal, Pietermaritzburg
- Lowveld, Nelspruit

National Herbarium

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

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.

Important dates on South Africa's environmental calendar

19 – 25 March	National Water Week
3 – 9 May	National Bird Week
1 – 7 September	National Arbor Week
4 – 8 October	WeedBuster Week
11 – 15 October	National Marine Week

Protected areas

The Convention on Biological Diversity, to which South Africa is a signatory, required that 10% of 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).

By mid-2013, South Africa had 528 protected areas, of which 20 were marine, totalling 7,5 million ha or 6,2% of the country's land area.

South Africa aims to expand the conservation areas under formal protection to the international standard of 10% of the total area of the country. The department works closely with landowners to ensure their participation in the Stewardship Programme, which allows land owners to use their land for biodiversity and conservation purposes. This is aimed at expanding the country's conservation estate.

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, uninhabited and underdeveloped, and access is strictly controlled with no vehicles allowed. The highest management priority is the maintenance of the intrinsic wilderness character.

Wilderness areas include the Cederberg Wilderness Area and Dassen Island in the Western Cape, and the Baviaanskloof Wilderness Area in the Eastern Cape.

South African National Parks

SANParks' primary mandate is to oversee the conservation of South Africa's biodiversity, landscapes and associated heritage assets through a system of national parks. Its mandate is based on the following core values:

- conservation management through the national parks system
- constituency building and people-focused eco-tourism management
- corporate governance and sound business and operational management.

SANParks manages a system of parks, which represents the indigenous fauna, flora, landscapes and associated cultural heritage of the country. The work of SANParks focuses on building strategic partnerships at interna-

tional, national and local levels, in support of the conservation of the natural and cultural heritage of South Africa. It has to ensure that South Africans participate and get involved in biodiversity initiatives, and that all its operations have a synergistic existence with neighbouring communities for their educational and socio-economic benefit.

In 2013, the Mokala National Park in the Northern Cape extended its borders as part of its expansion plan, which makes the park more economically and socially sustainable. According to SANParks, the park is now 2 7571 ha in size after the fence-cutting ceremony incorporating the neighbouring Kameeldoorns property to realise the expansion.

The national parks are:

- Addo Elephant National Park
- Agulhas National Park
- Ai-Ais/Richtersveld Transfrontier Park
- Auwabies 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
- Kgalagadi Transfrontier Park
- Kruger National Park
- Mapungubwe National Park
- Marakele National Park
- Mokala National Park
- Mountain Zebra National Park
- Namaqua 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.

SANParks is the leading conservation authority in all national parks around South Africa and responsible for 3 751 113 ha of protected land in 20 national parks. SANParks, supported by the Government through the departments of environmental affairs and of tourism, has increased the area of land under its protection by 360 000 ha over the past 20 years. Since 2000, SANParks has added 558 897 ha to its national parks.

One week during September every year, all South Africans with a valid identity document are able to spend a day at a national park of their choice throughout the country free of charge. National Parks Week recognises the success of the country's parks and the critical role they play as catalysts for local economic development and job creation. The week was also aimed at cultivating a culture of pride in all South Africans in their relationship with the country's natural, cultural and historical heritage.

Transfrontier conservation areas (TFCAs)

A TFCA is a cross-border region. The conservation status of the areas within a TFCA 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 TFCA is not always possible.

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

The seven TFCAs are the:

- Ai-Ais/Richtersveld (Namibia, South Africa)
- Great Limpopo Transfrontier Park (Botswana, South Africa, Zimbabwe)
- Greater Mapungubwe
- Kavango-Zambezi (Angola, Botswana, Namibia, Zambia, Zimbabwe)
- Kgalagadi Transfrontier Park (Botswana, South Africa)
- Lubombo Transfrontier Conservation and Resource Area (Mozambique, South Africa, Swaziland)
- Maloti-Drakensberg Transfrontier Conservation and Development Area (Lesotho, South Africa).

Biosphere reserves

A biosphere designation is given by the UN Educational, Scientific and Cultural Organisation (Unesco) to special landscapes where people are collaborating to ensure their environmental integrity as the basis for their economic development. Biosphere reserves are nominated by their governments for inclusion in the Man and the Biosphere Programme.

In September 2013, SANParks handed over a science laboratory to the learners and community in Galeshewe in the Northern Cape as part of SANParks' corporate social investment programme initiated to support community development educational infrastructure and enterprise development, among other things.

SANParks is committed to a five-year partnership with the Northern Cape Education Department to provide mobile library services to schools in the province. The first mobile bus and learning materials were expected to be handed over in February 2014.

SANParks has similar initiatives in Mbaula village in Limpopo and in Mpumalanga and is planning initiatives in the Eastern Cape and in other parts of the country.

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

South Africa's biosphere reserves include:

- Vhembe, situated in the north-east of Limpopo, which includes the northern part of the Kruger National Park; the Makuleke Wetland, which is protected under the Ramsar Convention; the Soutpansberg and Blouberg biodiversity hot spots; and the Makgabeng Plateau.
- The 100 000-ha Kogelberg Reserve on the country's southern coast is in the middle of the Cape Floral Region and 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, which is home to a penguin colony.
- The Cape Winelands Biosphere Reserve includes a part of the Cape Floral Region, as well as the wine-growing region.
- In the north there is 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 Lephale, Mokolo, Matlabas and Magalakwena rivers.
- The Kruger-to-Canyons Biosphere Reserve stretches from the Kruger National Park to the Blyde River Canyon. It is an important conservation area as it covers three biomes.
- The Gouritz Cluster Biosphere Reserve is recognised by Unesco in terms of the Man and Biosphere Programme.

By December 2013, more than 850 young environmental monitors have been appointed to work in protected areas across the country.

World heritage sites

A Unesco World Heritage Site such as a forest, mountain, lake, desert, monument, building, complex or city is listed by Unesco as being of special cultural or physical significance. It catalogues, names and conserves sites of outstanding cultural or natural importance to the common heritage of humanity. While each World Heritage Site remains part of the legal territory of the State wherein the site is located, Unesco considers it in the interest of the international community to preserve each site.

South Africa has eight world heritage sites proclaimed by Unesco:

- Robben Island: situated 11 km offshore from Cape Town, the island is most famous as the place where Nelson Mandela was imprisoned. It is now home to the world-renowned Robben Island Museum and has become a popular tourist attraction.
- The iSimangaliso Wetland Park was listed as South Africa's first World Heritage Site in December 1999 in recognition of its natural beauty and unique global values. The 332 000-ha park 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. The name iSimangaliso means miracle and wonder. The park also has four Ramsar sites.
- The Cradle of Humankind consisting of the hominid fossil sites at Swartkrans, Sterkfontein and Kromdraai. 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 that provide 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 encased in a bed of dolomite deposited around 2,5 billion years ago. In April 2010, a new species of hominid, *Australopithecus sediba*, estimated to be two million years old, was discovered in the Cradle of Humankind.
- The Ukhahlamba-Drakensberg Park (a mixed natural and cultural site) is a world heritage site covering 242 813 ha (2 428 km²). The park spans parts of both South Africa, in KwaZulu-Natal, and Lesotho. The park includes the Royal Natal National Park, a provincial park, and the Drakensberg National Park, which covers part of the Drakensberg, the highest mountain in southern Africa. Under the Ramsar Convention, the park is in the List of Wetlands of International Importance.
- Mapungubwe Heritage Site: in September 2011, the Department of Environmental Affairs, SANParks and Coal of Africa Limited signed an historical Memorandum of Agreement (MoA) as part of the environmental authorisation issued in accordance with Nema, 1998, to ensure the integrity of the Mapungubwe Cultural Landscape World Heritage Site.

According to the MoA, the integrity of the World Heritage Site will be maintained through comprehensive biodiversity offset programmes, thereby optimising benefits to local communities.

- Cape Floral Region, the smallest of the six recognised floral kingdoms of the world, is an area of extraordinarily high diversity and home to more than 9 000 vascular plant species, of which 69% are endemic. Much of this diversity is associated with the fynbos biome. The economical worth of fynbos biodiversity, based on harvests of fynbos products (e.g. wildflowers) and ecotourism, is estimated to be in the region of R77 million a year.
- Richtersveld Cultural and Botanical Landscape: The site 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*.
- Vredefort Dome, about 120 km south-west of Johannesburg, is a representative part of a larger meteorite impact structure, or astrobleme. Dating back 2,023 million years, it is the oldest astrobleme yet found on Earth. With a radius of 190 km, it is also the largest and the most deeply eroded. Vredefort Dome bears witness to the world's greatest known single energy release event, which had devastating global effects including, according to some scientists, major evolutionary changes. It provides evidence of the Earth's geological history and is crucial to understanding of the evolution of the planet. Despite the importance of impact sites to an the planet's history, geological activity on the Earth's surface has led to the disappearance of evidence from most of them, and Vredefort is the only example to provide a full geological profile of an astrobleme below the crater floor.

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

On 15 November 2011, Hong Kong customs officials seized a container of 33 rhino horns, 758 ivory chopsticks and 127 ivory bracelets, which were shipped from Cape Town harbour. An investigation was launched by the Endangered Species Section of the Hawks and the docket presented to the National Prosecuting Authority.

Since South Africa and China are parties to the Convention on International Trade in Endangered Species, the Director of Public Prosecutions applied to the Hong Kong Special Administration Region of the People's Republic of China for mutual legal assistance. The entire consignment was returned to South Africa in November 2013.

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.

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

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

By 2013, about 115 000 wetlands, covering over four million hectares, comprising close to 4% of the country's total surface area, had been mapped in South Africa. They are part of the natural infrastructure for gathering, managing and delivering water for human use.

Wetlands support a range of specialised plant, insect and mammal life and also supply food, grazing, building and craft material. They 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 plants/facilities.

South Africa was one of the first six countries to become a signatory to the Convention on

Wetlands of International Importance, called the Ramsar Convention, when it came into force in 1975. It is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

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

South Africa's Ramsar sites include:

- Barberspan
- Blesbokspruit Nature Reserve
- De Hoop Vlei
- De Mond (Heuningnes Estuary)
- Kosi Bay
- Langebaan
- Makuleke Wetlands
- Ndumo Game Reserve
- Ntsikeni Nature Reserve
- Nylsvley Nature Reserve
- Orange River Mouth Wetland
- Prince Edward Islands in Antarctica
- Seekoeivlei
- St Lucia
- the turtle beaches and coral reefs of Tongaland
- Ukhahlamba-Drakensberg Park
- Verlorenvlei Nature Reserve
- Wilderness Lakes.

South Africa is seen as a leader in the rehabilitation of wetlands. The damage done to wetlands can be reversed, as is seen at Rietvlei Dam in Gauteng.

Government has pledged more than R75 million to rehabilitating wetlands. Rehabilitation is ongoing, with attention to poverty-stricken areas being of major concern.

Marine protected areas (MPAs)

MPAs conserve natural environments and assist in the management of fisheries by protecting and rebuilding economically important stocks. They are also used to develop and regulate coastal ecotourism opportunities.

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

South Africa's MPAs include the:

- Aliwal Shoal, KwaZulu-Natal
- Betty's Bay, Western Cape
- Bird Island, Eastern Cape
- De Hoop, Western Cape
- Dwesa-Cwebe, Eastern Cape
- False Bay, Western Cape
- Goukamma, Western Cape
- Hluleka, Eastern Cape
- iSimangaliso, KwaZulu-Natal
- Langebaan Lagoon, Sixteen Mile Beach,

In August 2013, the South African Weather Service in collaboration with the Department of Environmental Affairs and the World Meteorological Organisation (WMO) held a four-day workshop on the national implementation of the WMO's Global Framework for Climate Change Services (GFCS). The workshop explored the maturity of activities within the GFCS' five components, namely the user interface; the climate services information system; observations and monitoring; research, modelling and applications; and capacity development. More than 150 climate scientists, sectorial experts and decision makers in climate change-related fields analysed the implications of the GFCS for South Africa.

Malgas Island, Marcus Island, Jutten Island, Western Cape

- Pondoland, Eastern Cape.
- Robberg, Western Cape
- Sardinia Bay, Eastern Cape
- Stilbaai, Western Cape
- Table Mountain, Western Cape
- Trafalgar, KwaZulu-Natal
- Tsitsikamma, Western Cape.

In April 2013, World Wildlife Fund (WWF) South Africa presented the Minister of Water and Environmental Affairs with a Gift to the Earth Award. The Minister received this accolade on behalf of the South African Government, following the recent formal gazettement of the declaration of the Prince Edward Islands MPA – South Africa's first offshore MPA.

The Prince Edward Islands form an important global biodiversity hotspot, which was subject to rampant poaching during the late 1990s. Protection of this island group significantly contributes to the conservation of global biodiversity and the fragile southern oceans, in particular.

The islands are home to albatrosses, penguins, killer whales and Patagonian toothfish stocks. Unfortunately, this wildlife has been threatened by illegal and unsustainable fishing practices in the past, resulting in significant economic and ecological losses.

Zoological gardens

Established in 1899 in Pretoria, and given national status in 1916, the National Zoological Gardens (NZG) of South Africa is the largest zoo in the country and the only one with national status. Over 600 000 people visit it every year.

It plays a major role in the conservation of wildlife, maintaining one of the largest animal collections in Africa, and has over 8 000 individual animal specimens representing over 500 species.

The species are managed across two facilities stretching into the provinces of Gauteng (Pretoria) and Limpopo (Mokopane). About 70% of the species are of African origin and 30% of global representation.

As a member of the World Association of Zoos and Aquariums and the African Association of Zoos and Aquaria, the NZG participates in several endangered species management programmes and successfully breeds several endangered species of both continental and global significance.

Among the endangered species the NZG contributes to conserving are the cheetah, rhino, ground hornbill, red-billed oxpecker and several endangered antelope species.

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.

The Johannesburg Zoological Gardens' core business is the accommodation, enrichment, husbandry and medical care of wild animals.

It also plays an important role in conservation projects of both indigenous and internationally endangered animals. The zoo joins other conservation organisations in programmes involving:

- wattled crane recovery
- amphibian conservation
- ground hornbill breeding and off-site surveys
- vulture conservation
- chimpanzee conservation with the Jane Goodall Institute.

The Endangered Wildlife Trust (EWT) is a major partner.

Mitchell Park in Durban is the country's second oldest zoo after the Pretoria NZG. There are about 30 projects on the cards for the zoo, including cheetah and chimpanzee enclosures.

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 1 333 ha.

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

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

World Oceans Day is observed internationally on 8 June. The 2013 theme was Oceans and People. This special day is an opportunity to celebrate the world's shared oceans and to raise awareness about the crucial role the ocean plays in people's lives. The observance of World Oceans Day in South Africa provides the department with an opportunity to highlight the considerable challenges of dealing with marine pollution, maintaining the oceans' capacity to regulate the global climate, supply essential ecosystem services and provide sustainable livelihoods and safe recreation. The annual SA Agulhas II Open Day offers the public a unique opportunity to learn more about the SA Agulhas II ship, its operations and the department's research in the oceans and coastal environment.

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 the lemur, the rare tsessebe, roan antelope and black rhino.

The De Wildt Cheetah and Wildlife Centre near Pretoria, is best known for its captive-breeding programme that contributed to the cheetah being removed from the endangered list in 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 in coat pattern 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 Limpopo was established as a breeding programme for the then endangered cheetah.

The centre caters for, among other animals, five species of vulture: Cape griffins as well as 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 includes the rare black-footed cat, vulnerable African wild cat, ground hornbills (in cooperation with the NZG), the 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.

Aquariums and oceanariums

There are aquariums in Pretoria, Port Elizabeth, Cape Town, Durban and East London.

The Aquarium and Reptile Park of the NZG in Pretoria 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 containing 40 different species of bony fish and two larger tanks that display sharks and stingrays. East London aquarium was 82 years old in 2013, making it South Africa's oldest aquarium.

At the Two Oceans Aquarium 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.

The aquarium at uShaka Marine World in Durban incorporates both fresh and sea water species, 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 has a unique shipwreck-themed aquarium, a penguin rookery and a 1 200-seater dolphin stadium, the largest dolphinarium in Africa.

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 in realistically landscaped glass enclosures.

The Aquarium and Reptile Park at the NZG 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 inland from Shelly Beach, on KwaZulu-Natal's South Coast.

The CrocRiver Enviro Park in Nelspruit is the largest facility of its type in Africa. The park offers, among other things, turtle, crocodile and fish ponds; the water monitor lizard pond; and the Desert House, in which a desert-like atmosphere has been created, and which is home to the reptile gallery where indigenous and exotic reptiles from all over the world are displayed.

Khamai Reptile Centre's primary aims are conservation, breeding of endangered reptiles and education. Located outside Hoedspruit in

In September 2013, South Africa celebrated World Maritime Day under the theme Sustainable Development: International Maritime Organisation's contribution beyond Rio+20. South Africa declared 2013 as Maritime Year.

Mpumalanga, it offers a close-up look at many local as well as exotic snakes, crocodiles and lizards.

Managing environmental resources

Private sector involvement

In South Africa, numerous private bodies are involved in conservation activities. More than 400 organisations concentrate on conservation, wildlife and the general environment, while more than 30 botanical and horticultural organisations concentrate on the conservation of the country's fauna and flora. These include the:

- BirdLife South Africa
- Botanical Society of South Africa
- Centre for Rehabilitation of Wildlife
- Conservation International
- Delta Environmental Centre
- Dolphin Action Protection Group
- EcoLink
- EWT
- 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
- World Wildlife Fund of South Africa.

Rhino poaching

South Africa protects about 93% of the remaining white rhino population in Africa and nearly 83% of the continent's combined population of black and white rhinos.

In an effort to fight the escalation in rhino poaching, the National Biodiversity Investigators' Forum was established to improve multi-departmental cooperation and information sharing with law enforcement institutions.

The department is also reviewing the National Strategy for the Safety and Security of Rhinoceros Populations in South Africa - adopted in 2010, to ensure it meets the requirements of those working in the field to ensure their efforts to curb the scourge of rhino poaching are coordinated, effective and efficient.

The establishment of a National Rhino Fund will result in the consolidation of all funding requirements and ensure that all monies raised are distributed successfully to State and privately-owned rhino anti-poaching initiatives. These include those involved in conservation,

safety and security, skills development and research.

Government increased its funding to the Save the Rhino Fund. In addition, the interim National Wildlife Reaction Unit was established as a permanent unit. The South African National Defence Force is monitoring the 350-km national border in the Kruger National Park, as well as other borders with neighbouring countries. During 2013, an additional 150 rangers joined the 500 already deployed to the Kruger National Park to address this crime.

Over the past two years more than 60% of the rhino killings have occurred in the Kruger National Park.

The department also deployed conservation specialists at key designated ports of entry and exit through which the international trade in endangered species is exported and imported.

The department embarked on an in-depth amended and further review of several pieces of legislation to incorporate various aspects to tighten issues of control and coordination, and to enhance enforcement efforts.

At the 16th COP of the Convention on the International Trade of Endangered Species of Wild Fauna and Flora (Cites) in Thailand in March 2013, South Africa successfully offered to host the 17th Cites COP in 2016. In the same light, the department intensified the collaborative law enforcement effort to combat the increasing scourge of rhino poaching as well as international cooperation with recipient and transit countries such as Vietnam, Thailand and China. Government signed MoUs with Vietnam and China and aimed to sign similar agreements other Asian countries and Mozambique. These MoUs allow government to collaborate on joint policing/security measures, strengthening laws, joint technology innovation and use, awareness campaigns and prosecutions to justice programmes.

Government elevated the rhino-poaching challenge to the National Joint Security Committee where a National Joint Operational Instruction Strategy has been forwarded to all security structures for immediate implementation. Furthermore, R75 million was allocated to SANParks for the purpose of combating ongoing poaching from 2013/14 to 2015/16.

In March 2013, South Africa was part of 178 countries gathering in Bangkok to decide how to improve the world's wildlife trade regime, and ensure the survival of threatened species. More than 2 000 delegates attended the 16th Conference of Parties of the Convention on the International Trade in Endangered Species of Wild Fauna and Flora in Thailand's capital. The tabled proposals at the conference included up-listing the rhino due to poaching, from which several countries have suffered, including South Africa.

According to the Professional Hunters Association of South Africa, the value of rhinos lost to poaching in South Africa has now been set at over a R1 billion over the past five years. The association says that as a result of rhino poaching, 400 ha of game ranching land have been lost to wildlife conservation. A total of 1 004 rhino were poached in South Africa in 2013. In 2012, a total 668 rhino were poached, while 448 were killed in 2011. Since 2008, there have been 2 778 rhino poached in South Africa.

The Kruger National Park bore the brunt of rhino poaching in 2013 with the park losing a total 606 of the iconic animals to poachers.

A total of 114 rhino were poached in Limpopo, 92 in Mpumalanga, 87 in North West and 85 in KwaZulu-Natal.

The number of rhino poachers arrested during 2013 increased considerably with 343 being arrested, 133 of them in the Kruger National Park. In 2012, 267 alleged poachers were arrested. Since the beginning of 2014, six alleged poachers have been arrested.

In November 2013, a Gazelle helicopter was donated to the Kruger National Park to boost the battle against poaching. It would be based in Phalaborwa and be used in SANParks' anti-poaching operations in the north of the park.

Nearly 1 500 rhinos have been killed for their horns in the Kruger National Park in the past five years.

Marine pollution and sustainability

South Africa has one of the 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 of, recovering or stabilising spilt oil and rehabilitating the environment.

With 80% of 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 refining 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.

The department has also developed the Cape Zone Oil Spill Plan.

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 and 100 honorary fishery-control officers, after the implementation of the Honorary Fishery-Control Officers Policy.

The department took delivery of four environmental-protection vessels as part of measures to protect marine and coastal resources, namely the Lillian Ngoyi, Ruth First, Victoria Mxenge and Sarah Baartman. They patrol up to the 200 nautical-mile limit from the shore and the most remote reaches of the EEZ as well as around the Prince Edward Islands. The vessels also conduct multilateral patrols in the Southern 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 their movements can be monitored.

Five coastal nations in the SADC have taken the innovative step of linking their vessel-monitoring systems. Angola, Mozambique, Namibia, South Africa and Tanzania have signed a MoU that will allow them to share information about the movement of licensed boats along the southern African coast.

Chemicals and waste management

South Africa has taken a number of steps to promote environmentally sound management of chemicals and waste throughout the life cycle, including being a party to a range of multilateral environment agreements and an active member in instruments on chemicals and waste. These include the:

- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade
- Stockholm Convention on Persistent Organic Pollutants
- Montreal Protocol on Substances that Deplete the Ozone Layer
- Basel Convention on the Control of Transboundary Movement of Hazardous Wastes

In 2013, a sanctuary to rehabilitate orphaned rhino calves was opened at the Thula Thula private game reserve in KwaZulu-Natal.

- Strategic Approach to International Chemicals Management, which is governed by the International Conference on Chemicals Management.

South Africa had a significant role in the ongoing negotiations concerning the Intergovernmental Negotiating Committee to Prepare a Globally Legally Binding Instrument on Mercury, including research into coal-dependent power/electric stations and the situational analysis of mercury in the country.

To align fragmented legislation, the department established a National Multi-Stakeholder Committee for Chemicals Management to facilitate coordination.

The National Waste Management Strategy has eight key goals namely:

- promoting waste minimisation, reuse, recycling and recovery of waste
- ensuring effective and efficient delivery of waste services
- growing the contribution of the waste sector to the green economy
- ensuring that people are aware of the impact of waste on their health, well-being and the environment
- achieving integrated waste management planning
- ensuring sound budgeting and financial management for waste services
- providing measures to rehabilitate contaminated land
- establishing effective compliance with and enforcement of the Waste Act.

Youth Jobs in Waste Programme

In June 2013, the Minister of Water and Environmental Affairs launched the Youth Jobs in Waste Programme. About 1 000 young people are expected to benefit from the programme, which aims to address the backlog in solid waste service delivery in all municipalities in the country.

The waste sector has been identified as one of the sectors with the potential to contribute substantially to the generation of jobs within the green economy.

An estimated 1 000 job opportunities will be created by placing young people in municipalities as Landfill Site Assistants, Waste Collection Administrators and Environmental Awareness Educators.

Further work opportunities will be created by the construction activities associated with the building or erection of landfill site offices, ablation facilities, as well as weigh-pad platforms at landfill sites across the country.

The Free State will see 330 young people recruited for the project, while there will be 326

in the North West and 140 each in the Eastern Cape, KwaZulu-Natal and Limpopo.

It is also expected that some of the young people recruited into the programme will move on to further their environmental careers, either in other employment sectors or by becoming involved in business ventures.

In February 2013, the Deputy Minister of Water and Environmental Affairs, accompanied by representatives from the SAWS, led a campaign to inform communities in the Vhembe district municipality about severe weather conditions. The climate records of the SAWS show a growing trend in extreme weather events.

Since government has elevated and prioritised warnings around weather-related hazards, the SAWS has reviewed its early warning system in collaboration with the Department of Cooperative Governance and Traditional Affairs.

Several steps have been taken to put infrastructure in place to ensure better disaster preparedness.

Recycling

The National Recycling Forum (NRF) is a non-profit organisation created to promote the recovery and recycling of recyclable materials in South Africa. Members of the NRF include representatives of:

- the formal recycling industry in South Africa
- government departments
- regional recycling forums
- local government-based organisations
- local government utilities and co-opted advisory members

To promote the interests of its members and the formal recycling industry in South Africa, the NRF:

- provides a national communication forum for key players in the field of recycling
- interacts with central and provincial government to encourage the recycling of glass, paper, plastics, tin-plate steel, used oil and electrical and electronic waste
- facilitates the formation of regional forums that draw their memberships from enthusiastic and interested volunteers as well as small recyclers, in the major centres of South Africa
- encourages the establishment of buy-back centres and drop-off points through the activities of its members in the various centres.

In September 2013, the 16th International Union of Air Pollution Prevention and Environmental Protection Association was hosted in association with the National Association for Clean Air in Cape Town. Held under the theme "Many Nations – One Atmosphere: Plotting the Path to Sustainability," the focus of the congress was to seek holistic sustainable solutions for air quality in the developing world.

Collect-a-can, one of the oldest recycling initiatives in South Africa, has been instrumental in creating a culture of recycling in South Africa. It has obtained local and international acclaim for its contribution towards protecting the environment, as well as its significant contribution to job creation and poverty alleviation.

Collect-a-Can has introduced millions of school children to the idea of caring for the environment through its schools competition.

Climate change and air-quality management

South Africa is making steady progress in implementing the National Climate Change Response Policy, despite having to balance its economic aspirations and environmental protection.

Government continues to engage actively and meaningfully in international climate change negotiations, specifically with the UNFCCC.

The UNFCCC's COP 18 Conference was held in Doha, Qatar, in late 2012. This secured the Durban legacy with an outcome that concluded the necessary provisions to give effect to a second commitment period under the Kyoto Protocol, including legal, operational, ambition and environmental integrity considerations.

The policy implementation actions and activities flowing from this include the analysis of mitigation potential in key economic sectors as the basis for the establishment of Desired Emission Reduction Outcomes or what is called DEROs, and defining the optimal mix of measures for achieving those DEROs, with the greatest benefit and least cost to the economy.

The Department of Energy processes all applications for renewable energy. By April 2013, up to 25 000 MW of wind and solar projects had been authorised for the various parts of the country.

Air quality remains an important and challenging environmental issue in South Africa.

Technical and legislative tools have been developed to roll-out and monitor the implementation of national environmental management including the:

- National Framework for Air Quality Management

- air quality model by-laws
- *Air-Quality Management Planning Manual*
- *National Ambient Air-Quality Standards and Listed Activities* and the *Minimum Emission Standards*.

Several of these tools were under review accelerate the ongoing implementation of the AQA of 2004.

The South African Air-Quality Information System (Saaqis) contains the latest updated data on locations and can give the status of air quality or pollution for a specific day and time on its website: www.saaqis.org.za.

A number of air-quality monitoring stations, mostly in Mpumalanga, eThekweni Municipality, the City of Johannesburg and the City of Tshwane, report to Saaqis.

Environmental impact management

South Africa's environmental impact assessment (EIA) regulations are:

- streamlining the EIA process
- introducing an approach where impact on the environment gets more attention
- introducing a listing notice dedicated to activities planned for predefined sensitive areas.

The Environmental Assessment Practitioners' (EAP) Association of South Africa aims to:

- achieve effective quality assurance in environmental assessment practice in South Africa
- promote the empowerment of black and female professionals within the environmental assessment field
- encourage continued professional development for EAPs in South Africa
- promote awareness of the purpose and practice of environmental assessment in South Africa.

The Department of Environmental Affairs has a new and improved EIA and management approach. In addition, the department is using alternative approaches to environmental impact management.

The department is already fully integrating waste and EIA, permitting processes with some provinces having followed suit.

Aquaculture

In February 2013, the DWA and DEA published the *EIA Guideline for Aquaculture in South Africa* for public comment. The guideline seeks to, among other things, align the EIA process and environmental authorisations with the specific nature of aquaculture.

The guideline emphasises and provides particulars of the authorisation requirements in aquaculture underpinned by various

The benefits derived from biodiversity or ecosystem services are estimated at R73 billion, contributing to 7% of South Africa's annual gross domestic product. The biodiversity economy, which is part of the national Green Economy, is therefore South Africa's competitive edge in growing the economy and addressing climate change adaptation. Biodiversity is a basis for human and socio-economic development.

environmental legal frameworks, including the Biodiversity Act of 2004, the Protected Areas Act of 2003 and the Waste Act of 2008.

Aquaculture has the potential to affect water, biodiversity, ecosystems and wild fish stocks. As such, the need for integrated planning that is flexible and detailed in the sustainable operation of an aquaculture venture is stressed.

The newfound support from government, the growing need for the integrated use of resources and the socio-economic needs behind the diversification of food production have led to rapid growth of the aquaculture sector.

National Environmental Impact Assessment and Management Strategy (EIAMS)

The EIAMS consists of voluntary and regulated instruments where:

- regulated EIAs are used only when it is the most appropriate tool
- EIAM occurs within the strategic context of environmentally informed spatial instruments, sector strategies and policies
- authorities have enough capacity with skilled and experienced officials
- other stakeholders have the capacity and skills to ensure maximum impact on the effectiveness and efficiency of the strategy
- government regulatory processes have been integrated and aligned
- government, EAPs, developers, and the community are equally committed to making it work.

4x4 regulations

The Strategy Towards Co-Regulation of the Off-Road Sector in South Africa is aimed at minimising 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 responsibly. The strategy applies 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, quad bikes and motorbikes.

A key outcome of the strategy was the development, drafting and implementation of national norms and/or standards, with a supportive enabling legislative framework, to facilitate environmental compliance, responsible tourism and the long-term sustainability of the off-road industry.

The banning of off-road vehicles in coastal zones has enabled several shore-breeding birds, especially the Damara tern and the African black oystercatcher, to breed successfully on beaches again. The number of loggerhead

and leatherback turtles hatching successfully on KwaZulu-Natal's northern beaches has also increased since the ban was enforced.

Coastal management

The ocean covers three quarters of the Earth, hence the importance of its protection.

The department recognises the challenges regarding the management of ocean spaces in South Africa's adjacent ocean areas.

Of the 200 estuaries found along the South African coast, 25% are in a degraded state. This is due to inappropriate developments along the banks of estuaries and in their catchment areas. The department will focus its attention proactively on these degraded systems and prioritise developing management plans to improve the functioning of estuaries in associated hinterlands.

The Buoy Oceans Monitoring System, which will provide information on the state of the oceans at Storms River in the Tsitsikamma National Park, is the first in a series of observation and monitoring platforms, which will form the basis of the South African National Oceans and Coastal Monitoring System.

The Department of Environmental Affairs has also reviewed the Recreational Water Quality Guidelines for Coastal Waters. The ultimate intention is to develop effective early warning systems to pre-empt the catastrophic impacts of possible hazards.

Erosion and desertification

According to the UN Environment Programme, desertification affects 900 million people in 99 countries with 24 million tons (Mt) of topsoil being lost to erosion annually. The resultant land degradation costs Africa about US\$9 billion every year.

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

About 81% of South Africa's total land area 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

The Greenest Municipality Competition is premised on reducing, recycling and reusing waste materials. Although these principles are still relevant, other elements related to sustainable development and various greening interventions have been added. In June 2013, the Ekurhuleni Metropolitan Municipality was the overall winner in the Greenest Municipalities competition; eThekweni was the first runner-up; while the City of Cape Town was the second runner-up. At local municipality level, Greater Tzaneen topped the category, followed by Newcastle and Drakenstein.

degradation. This process has already claimed more than 250 000 ha of land in South Africa.

South Africa is a signatory to the UN Convention to Combat Desertification (UNCCD). Its main objectives include cooperation between governments, organisations and communities to accomplish sustainable development, especially where water resources are scarce.

The purpose of the convention is 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 the coordinator for the Valdivia Group for Desertification.

The group consists of Argentina, Australia, Brazil, Chile, New Zealand, South Africa and Uruguay. The aim is, among other things, to foster scientific and technological cooperation.

South Africa has introduced legislation such as the NEMBA of 2004 to promote the conservation of biodiversity, and fight desertification and land degradation.

As part of the UN international campaign to address global environmental deterioration and in particular, combat dry land degradation, which affects up to one-quarter of the world's land surface, the UN has designated 17 June as the World Day to Combat Desertification. This date marks the anniversary of the adoption of the UNCCD. The theme for 2013 was "Drought and water scarcity" and the slogan "Don't let our future dry up."

Biodiversity

In January 2013, South Africa became the first country in 2013 and the 12th country overall to ratify the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the Convention on Biological Diversity, popularly referred to as the Nagoya Protocol on ABS. The Nagoya Protocol is a legally binding agreement outlining a set of terms prescribing how one country will gain access to another country's genetic resources and how the benefits derived will be shared.

The EWT, in collaboration with the DEA,

Finding solutions to global warming and climate change requires the reduction of carbon emissions. However, this reduction should not undermine the prospects of industrialisation and development in the developing world, as people still need to seize opportunities that arise from the new technological developments and job-creation. The green economy was identified as one of the six job drivers in the New Growth Path. Many low-income houses have solar water heaters, which is something that has emerged from green technologies.

Nedbank Limited, Hatch Goba, De Beers, Transnet, Pam Golding Properties and Pick n Pay, launched the National Biodiversity and Business Network.

The aim of the network is to assist businesses from various sectors to integrate and mainstream biodiversity issues into their strategies and operations. It is designed to be an open and inclusive association of like-minded organisations that have recognised the need to raise awareness of, and stimulate conversation about biodiversity issues among members of the business community.

Government and businesses are realising that the economic and social development of the country depends on healthy ecosystems and biodiversity. The South African NDP: Vision 2030 confirms that national economic growth depends on the environmental sustainability of the country's proposed development path.

South Africa is the third most biodiverse country in the world, after Indonesia and Brazil. These countries harbour most of the Earth's species and collectively accommodate more than two thirds of global biodiversity.

South Africa is home to some 24 000 species, around 7% of the world's vertebrate species, and 5,5% of the world's known insect species (only about half of the latter have been described).

In terms of the number of endemic species of mammals, birds, reptiles and amphibians found in South Africa the country ranks as the fifth richest in Africa and the 24th richest in the world.

Marine biodiversity is also high, with more than 11 000 species found in South African waters, which is about 15% of global species. More than 25% of these species (or 3 496 species) are endemic to South Africa, many of which are threatened, especially in river ecosystems (82%) and estuaries (77%).

South Africa is a signatory to several biodiversity-related multilateral agreements such as the:

- Convention on Biological Diversity Cartagena Protocol on Biosafety
- Ramsar Convention
- Cites
- UNCCD
- Convention on Migratory Species.

The National Biodiversity Strategy and Action Plan (NBSAP) is aimed at establishing a framework and plan of action for the conservation and sustainable use of South Africa's biodiversity and the equitable sharing of benefits derived from this use.

A scientific, systematic biodiversity assessment for the country was carried out in 2004 to spatially support the NBSAP, titled the National Spatial Biodiversity Assessment (NSBA).

The NSBA was updated in 2012, forming the National Biodiversity Assessment, 2011, with many significant findings requiring conservation action.

The Deputy Minister of Water and Environmental Affairs and the Deputy Minister of Agriculture and Rural Development of the Socialist Republic of Vietnam signed an action plan in May 2013 to implement the MoU on Biodiversity Conservation and Protection.

The implementation plan, effective until 2017, gives further impetus to the fight against wildlife crimes, particularly rhino poaching.

The objective of the MoU is to promote cooperation in the field of biodiversity management, conservation and protection. It is also expected to assist in curbing the scourge of rhino poaching because the MoU seeks to promote cooperation in law enforcement, compliance with the Cites and other relevant legislation and conventions on the basis of equality and mutual benefit

The National Biodiversity Framework (NBF), published in 2009, provides a framework to coordinate and align the efforts of the many organisations and individuals involved in conserving and managing South Africa's biodiversity, in support of sustainable development. The NBF is a requirement of the NEMBA of 2004.

Three internationally recognised biodiversity hotspots are found in South Africa. They are the:

- Cape Floral Kingdom (equivalent to the fynbos biome)
- Succulent Karoo (shared with Namibia)
- Maputaland-Pondoland-Albany Centre of Plant Endemism, which stretches from the Albany Centre in the Eastern Cape, through the Pondoland Centre of Plant Endemism and KwaZulu-Natal, and the eastern side of Swaziland, into southern Mozambique and Mpumalanga.

The Succulent Karoo Biome is one of only two arid biodiversity hotspots in the world, the other being the Horn of Africa.

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

National biodiversity biomes

Savanna Biome

The Savanna Biome is the largest biome in southern Africa, occupying 46% of its area, and over a third of South Africa. It is an area of mixed grassland and trees, 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, rhino, 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 lie 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. This semi-desert receives little rain in summer.

Rainfall varies from about 200 mm a year in the west to 400 mm a year in the north-east. 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 adaptation by plants.

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 advance slowly 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. It 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 ecosystem services, such as water production and soil retention necessary for economic development. It holds important biodiversity of global and domestic significance and value.

Trees are scarce and found mainly on hills and along riverbeds. Karee (*rhus lancea*), wild currant (*rhus pyroides*), white stinkwood (*celtis africana*) and several acacia species are the commonest.

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

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

The area is internationally recognised as an area of high species endemism for birds. The black korhaan, blue crane and guinea-fowl are among the birds found in the area.

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 fairyland. After rain, the drab landscape is suddenly covered with a multicoloured carpet of flowers (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.

In March 2014, the University of the Witwatersrand conferred an honorary doctorate on ecologist, environmentalist, bird specialist and artist, Mr Duncan Butchart, for sharing his specialist knowledge and skills with many local communities that have been enriched in their knowledge and understanding of the African environment.

Grass is scarce.

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

The 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 Earth's land surface.

Fynbos, which is found mainly in the Western Cape, is the name given to a group of ever-green plants with small, hard leaves (such as those in the *Erica* family). It is made up mainly of the protea, heathers and restio, and incorporates diverse plant species (more than 8 500 kinds, of which more than 6 000 are endemic).

The Fynbos Biome is famous for the protea, which is South Africa's national flower. 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, the Cape sugarbird and the protea seed-eater. Baboon, honey-badgers, caracal, the buck and several types of eagle and dassies are found in the mountains.

Forest Biome

South Africa's only significant natural 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 (Drakensberg mountains), 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 found

there are endemic to the Thicket Biome.

The Thicket Biome, which is predominantly in the Eastern Cape, supports four species of tortoise: the leopard tortoise (*geochelone pardalis*), angulate tortoise (*chersina angulata*), tent tortoise (*psammobates tentorius*) and parrot-beaked tortoise (*homopus areolatus*).

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 annual plants persisting in the form of seeds.

Perennial plants are usually encountered in specialised habitats associated with local concentrations of water from 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 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 this Biome are formally protected in the Richtersveld National Park.

International cooperation

In March 2013, government ministers from Angola, Namibia and South Africa signed the Benguela Current Convention, an environmental treaty promoting a coordinated regional approach to the long-term conservation and protection of the Benguela Current Large Marine Ecosystem (BCLME).

The BCLME is regarded as one of the richest ecosystems on Earth, with ecosystem goods and services estimated to be worth at least US\$54,3 billion per year. Offshore oil and gas production, marine diamond mining, coastal tourism, commercial fishing and shipping are some of the most important industrial activities that take place in the region.

The accord, signed in Angola, is a formal agreement that also seeks to provide economic, environmental and social benefits for the three countries.

The Benguela Current Commission is a permanent intergovernmental organisation, with a mandate to promote the long-term conservation, protection, rehabilitation, enhancement and sustainable use of the BCLME.

South Africa has signed several international conventions, treaties, protocols and other agreements supporting the principles of sustainable development including the:

- Convention on Biological Diversity (ratified in 1995)
- Cartagena Protocol on Biosafety (South Africa became a party in 2003)
- Kyoto Protocol (signed in 2003)
- UNCCD
- World Heritage Convention (ratified in 1997)
- Convention on Wetlands of International Importance (Ramsar Convention) (ratified in 1975)
- Convention on the Conservation of Migratory Species (acceded in 1991).

United Nations Framework Convention on Climate Change (UNFCCC)

South Africa ratified the UNFCCC in 1997, which is aimed at:

- implementing urgent action, from 2013 to 2020, including the adoption of a second commitment period under the Kyoto Protocol and a number of institutional mechanisms such as the Green Climate Fund
- acknowledging the inadequate commitments to reduce emissions made thus far; a work programme was agreed upon to increase pre-2020 levels of ambition
- action for the future with the negotiation of a legal agreement for the period beyond 2020.

The UNFCCC entered into force in 1994. The Conference of the Parties (COP) to the UNFCCC meets annually to assess progress in dealing with climate change. The COP is the supreme body of the convention and is its highest decision-making authority.

With 195 parties, the UNFCCC has near universal membership and is the parent treaty of the 1997 Kyoto Protocol. The Kyoto Protocol has been ratified by 193 of the UNFCCC parties.

Under the protocol, 37 states, consisting of highly industrialised countries and those making the transition to a market economy, have legally binding emission limitation and reduction commitments.

The ultimate objective of both treaties is to stabilise GHG concentrations in the atmosphere at a level that will prevent dangerous human interference with the climate system.

The launch of negotiations to shape the new global climate change agreement and first discussions on how to raise ambition took place

at the UNFCCC in Bonn in May 2012, which prepared decisions for adoption at the UNFCCC in Qatar later in 2012.

One of the central outcomes of the meeting in South Africa was to pave the way for a legal agreement under the UNFCCC applicable to all parties, to be completed by 2015 and to come into effect from 2020.

The 19th session of the Conference of the Parties (COP 19), held during November 2013, in Warsaw, Poland, ensured that progress was made with the implementation of decisions already taken under the UNFCCC and the Kyoto Protocol.

Under South Africa's COP Presidency, COP 17 achieved a historic agreement, initiating negotiations on a new global legal instrument, applicable to all countries, to be adopted by 2015 and to be fully operational in 2020.

United Nations Commission on Sustainable Development (CSD)

The UN CSD was established by the UN General Assembly in December 1992 to ensure effective follow-up of the UN Conference on Environment and Development, also known as the Earth Summit.

From its inception, the CSD was highly participatory in structure and outlook, by engaging in its formal proceedings a wide range of official stakeholders and partners through innovative formulae.

At the UN Conference on Sustainable Development (Rio+20), member states agreed to establish a high-level political forum that would subsequently replace the Commission on Sustainable Development.

Convention on International Trade in Endangered Species of Wild Fauna and Flora (Cites)

South Africa was a founding member of the Cites Treaty, which was adopted on 3 March 1973, but only came into force on 1 July 1975.

Signed by 149 countries, Cites is an international agreement between governments to protect endangered species against over-exploitation through regulations regarding imports and exports and in some cases prohibiting trade.

Cites was drafted as a result of a resolution adopted in 1963 at a meeting of members of the IUCN. Cites accords varying degrees of protection to more than 30 000 animals and

plant species, whether they are traded as live specimens, fur coats or dried herbs.

South Africa used the 16th Cites held in February 2013, in Thailand, to shine the spotlight on rhino conservation.

South Africa hosted and participated in side events during the 16th COP, and three of these events focused on rhino matters including conservation, safety and security and rhino economics or trade matters. This was reflective of the key areas addressed during the Rhino Issue Manager (RIM) process in 2012.

South Africa appointed a Rhino Issue Manager in May 2012, with the responsibility of conducting research and convening a series of stakeholder dialogues with all interested parties to facilitate wide-ranging and expert input into policy thinking.

In the course of the work of the RIM, 12 stakeholder meetings were held in Gauteng, Durban and Cape Town, with presentations being conducted in Bloemfontein and Cape Town.

The Cites parties meet every three years to consider amendments to the appendices of the convention; to make recommendations to improve the effectiveness; and to assess the implementation thereof.

Montreal Protocol on Substances that Deplete the Ozone Layer

The theme for the 2013 celebration of World Ozone Day was "A healthy atmosphere, the future we want" emphasised the collaboration and environmental benefits achieved by the international community through the operation of the Montreal Protocol. The international treaty is designed to protect the ozone layer by phasing out the production and consumption of numerous substances responsible for ozone depletion. The protocol has been recognised as a global success, demonstrated by the massive elimination of production and consumption of chlorofluorocarbons (CFCs), halons, carbon tetrachloride, methyl chloroform, and chlorobromomethane worldwide since it came into force in 1987.

South Africa, which became a signatory to the Montreal Protocol in 1990, has phased out CFCs, halons, methyl chloroform and carbon tetrachloride.

This makes 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.

The Greenest Municipality Competition is hosted annually by the Department of Water and Environmental Affairs. In August 2013, Newcastle in KwaZulu-Natal won the competition.

World Summit on Sustainable Development

South Africa hosted the WSSD in September 2002 in Johannesburg. The agreements reached then 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 most notable 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 such as:

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

United Nations Conference on Sustainable Development (Rio+20)

Rio+20 refers to the UN Conference on Sustainable Development which took place in Rio de Janeiro, Brazil, in June 2012. The meeting took place 20 years after the landmark 1992 Earth Summit in Rio, when more than 108 heads of state agreed to work together to develop national strategies to reduce carbon emissions, stabilise GHG, protect forests from destruction, and pay for their share of the damage caused to the Earth through pollution.

At Rio+20 world leaders, along with thousands of participants from the private sector, NGOs and other groups, came together to shape how countries could work together to reduce poverty, advance social equity and ensure environmental protection on an increasingly crowded planet.

The official discussions focused on two main themes: how to build a green economy to achieve sustainable development and lift people out of poverty; and how to improve international coordination for sustainable development.

At the Rio+20 talks 50 of the 193 member states of the UN launched new energy strategies, and private investors pledged more than US\$50 billion to carry out the goal of doubling the share of global renewable energy and the rate of energy efficiency improvement by 2030.

Sustainable Development and the Green Economy

The department began introducing the Green Economy with the use of the Green Fund

announced in 2012. The Implementing Agent, the DBSA, allocated funds through the first window to projects that proved to be sustainable, mainly in the alternative energy sector.

The Minister of Water and Environmental Affairs launched a R22-million Green Fund project in the uPhongolo Local Municipality, KwaZulu-Natal, in August 2013.

Known as "Farming the Wild," the initiative is a community-based project supported by the Green Fund. It aims to green the rural community of Somkhanda through the establishment of the Somkhanda Community Game Reserve.

Early in 2013, the department launched the zero emission pure electric green cars as a national pilot programme to demonstrate government's commitment to the reduction of carbon emissions that are chiefly responsible for climate change.

In the same vein, the bioprospecting and hunting industries will remain integral to the department's contribution to sustainable development and green jobs in South Africa.

Job creation

Demonstrating its commitment to improving socio-economic benefits within the environmental sector, the department has created 65 494 work opportunities, yielding 34 019 full-time equivalent jobs. The targeted designated groups were women, youth and people living with disabilities.

The department accessed R2,39 billion from the EPWP for environmental programmes in 2013/14, which boosted the job-creation objective of government, and secured vital environmental benefits from the work that was done.

The jobs created were coupled with skills development with 184 263 accredited training person days achieved.

Some 2 700 young people are expected to benefit from the Youth Environmental Services Programme over the next three years. Upon exiting the programme participants will be placed in either permanent employment or further training institutions.

The department launched the Youth Jobs in Waste Programme. This project was expected to create 330 job opportunities in the Free State and 326 in North West, and once rolled out nationally, it was expected to provide 3 577 young people with job opportunities in waste management and related entrepreneurship.

In addition to these youth employment initiatives, environmental monitors were introduced to deal with environmental threats in protected areas, including the scourge of rhino poaching nationally. This programme employs 1 000 young people to strengthen the fight against rhino poaching and other environmental challenges.

Urban environmental management

The Urban Environmental Management Programme is a partnership between 11 government institutions from the national, provincial and municipal spheres of government. The programme alleviates poverty through improved service delivery within the environmental management of urban areas.

Started in April 2006, the programme is a continuation of more than 10 years of environmental collaboration between South Africa and Denmark.



