Environment

The Department of Environmental Affairs (DEA) is mandated to give effect to the right of citizens to an environment that is not harmful to their health or well-being, and to have the environment protected for the benefit of present and future generations. To this end, the department provides leadership in environmental management, conservation and protection towards sustainability for the benefit of South Africans and the global community.

Strategies are therefore in place to:

- ensure that the department has optimal capacity to deliver services efficiently and effectively
- ensure that South Africa's environmental assets are conserved, valued, sustainably used, protected and continually enhanced for the benefit of both current and future generations
- enhance socio-economic benefits and employment creation in a safe, clean and healthy environment for both present and future generations
- provide leadership in environmental management, conservation and protection towards sustainability for the benefit of both current and future generations
- manage the interface between the environment and development to encourage the transformation of the development trajectory to an environmentally sustainable, inclusive, low carbon and green economic growth path
- promote compliance with environmental legislation, and act decisively against transgressors
- develop and facilitate the implementation of a climate change adaptation and mitigation regulatory framework
- facilitate the transition to an environmentally sustainable, job creating and low carbon, green development pathway through the Green Fund and environmental projects in the Expanded Public Works Programme (EPWP)
- improve the provision of quality waste-management services across the country with clear environmental health benefits for communities, particularly those with no previous access to waste-management services.

Budget and funding

An amount of R103 million for the period of 2014/15 to 2016/17 has been allocated to South African National Parks (SANParks) to combat rhino poaching. This is in addition to other financial assistance that SANParks has and continues to receive from private-sector organisations.

As part of the National Development Plan (NDP) to create green jobs, the spending focus over the medium term continued to be on creating jobs in the environment sector through the roll-out of the EPWP.

This focus is reflected in the significant amount of the DEA's budget allocated to the Environmental Programmes programme, which makes transfers of funds for the EPWP. Over the medium term, expenditure in this programme is projected to grow at an average annual rate of 10,7 % due to an additional allocation of R205 million over the period.

The increased expenditure will allow the EPWP to create 115 600 full-time equivalent jobs and 228 860 work opportunities over the medium term. Between 2010/11 and 2013/14, the programme created 102 128 full-time equivalent jobs and 276 080 work opportunities, hence the significant growth evident in expenditure on transfers and subsidies over the period.

In addition to transfers for the EPWP, the Environmental Programmes programme also makes transfers of funds to its public entities.

Projected to take up 21,9% of the department's allocation over the medium term, these transfers are expected to increase due to further Cabinet approved additional allocations of R490 million between 2014/15 and 2015/16 for infrastructure upgrades at the public entities; R50 million between 2014/15 and 2015/16 for combatting rhino poaching, mainly in the SANParks; R28 million over the medium term to repair infrastructure damaged by disasters at some SANParks operations; and R250 million in 2014/15 for the Green Fund to fund projects that support environmental protection.

An amount of R15,9 million in 2014/15 and R12,1 million in 2015/16 is allocated for the repairment of infrastructure damaged by natural disasters at the Kruger National Park in both Limpopo and Mpumalanga.

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).
- The National Environmental Management: Waste Amendment Act, 2014 (Act 449 of 2014)

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).

On 29 March 2014, South Africans celebrated Earth Hour. The purpose of Earth Hour is to make people aware of all the little things that can be done and people's choices and decisions that make a difference.

- 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.

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 NSSD 1 was implemented during the period 2011 to 2014. The lessons and evaluation of progress regarding the implementation of NSSD 1 will inform NSSD 2 (2015 to 2020).

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.

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 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.

The theme for the 2014 celebration of International Day for Biological Diversity was "Island Biodiversity".

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 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. The first maps by which to identify marine and coastal habitat types and wetland ecosystem types have been completed.

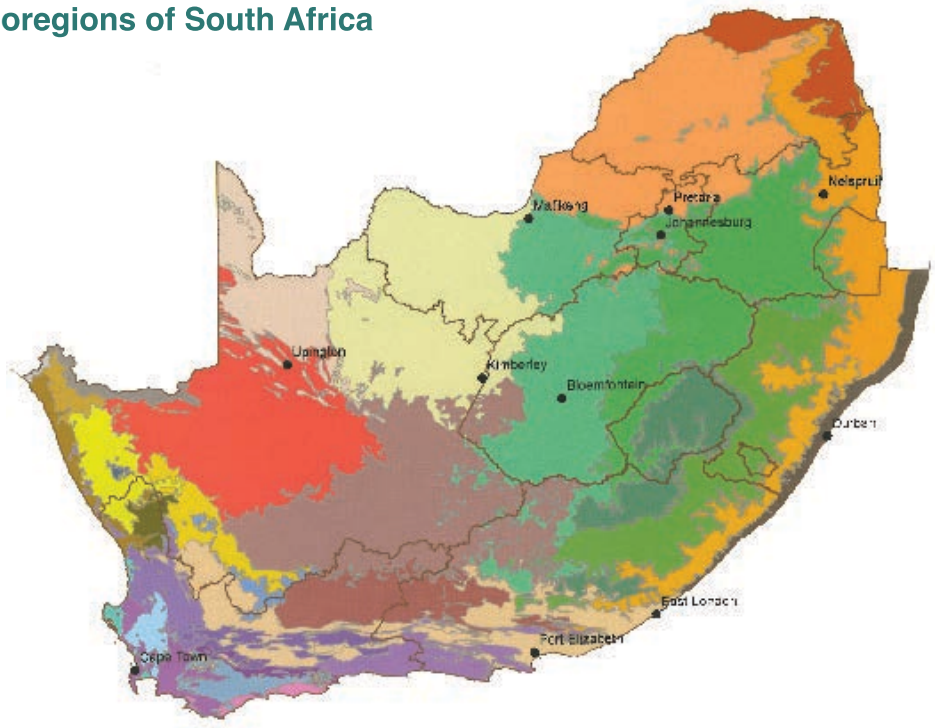
Projects, programmes and initiatives

South Africa's Green Economy

South Africa's green economy strategy comprises 8 key pillars, namely; green buildings and built environment; sustainable transport

Although 5 June is a global celebration of World Environment Day, South Africa has amplified this and dedicated the month of June as National Environment Month. World Oceans Day is celebrated on 8 June and World Day to Combat Desertification is on 17 June.

Bioregions of South Africa



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

Source: *Vision Endangered Wildlife Trust Seventeenth Annual*

and infrastructure; clean energy and energy efficiency; resource conservation and management; sustainable waste management; water management; sustainable consumption and production; and agriculture food production and forestry.

The Green Fund is one example of an innovative approach with which the country has made great strides. By 2014, 22 multi-year green economy projects and 16 research and technology-related projects valued at R572 million have been implemented.

South Africa is working at growing existing green sectors or industries that at the same time maximise job creation co-benefits. Through the Expanded Public Works culture and environment programme, the country is working on expanding job creation in the medium term.

People and Parks and Wildlife Economy projects

The DEA, in collaboration with the Mpumalanga Tourism and Parks Agency launched the People and Parks, and Wildlife Economy projects worth over R256 million in Arconhoek, Mpumalanga.

It is anticipated that more than 2 200 jobs will be created through this programme to be implemented in Mpumalanga alone.

The People and Parks programme is one of the DEA's initiatives aimed at addressing issues at the interface between conservation and communities, particularly with regards to the realisation of tangible economic and social benefits by communities who were previously displaced to pave the way for the establishment of protected areas.

The programme encourages communities to take leadership roles in the management and benefits of South Africa's biodiversity conservation, particularly in the protected areas.

It is through this programme that the DEA launched the National Co-Management Framework in September 2010, which is in accordance to the provisions of the National Environmental Management: Protected Areas Act of 2003.

The framework provides a coherent national guideline for the co-management of protected areas restored in terms of the Restitution of Land Rights Act, 1994 (Act 22 of 1994). It also aims to guide conservation agencies and successful restitution claimants in the development of co-management agreements for protected areas structuring benefit packages.

On the other hand, the Wildlife Economy programme fosters community participation to a sustainable beneficiation of wildlife.

Communities and nature reserves that stand to benefit directly from these projects include Andover; Loskop Dam; Barbarton; Mahushe Shongwe; Mawewe; Mdala-Mkhombo; Mthethomusha; Songimvelo; Nooitgedacht Dam; Manyeleti; and Bushbuckridge.

The DEA's Environmental Protection and Infrastructure Programme (EPIP), which funds the implementation of various projects aimed at protecting the integrity of the environment in South Africa, has grown from a budget of R28 million in the 1999/2000 financial year to just under R900 million in 2014.

Sustainable Development and the Green Economy

South Africa has developed the NDP to address its need to develop its economy along an internationally competitive, job creating, sustainable, climate resilient and low carbon development path. All the while recognising that South Africa's natural capital, in the form of ecosystems, biodiversity and other natural resources, is a critical foundation to unlocking and boosting socio-economic growth and ensuring the long-term well-being of society.

South Africa has introduced legislative amendments to develop an integrated environmental regulatory system. Among these are amendments to the National Environmental Management, Waste, Air Quality Management and Water Services Acts.

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

In addition, the Nema now includes environmental authorisation for mining developments. Accordingly, the Minister of Mineral Resources will issue mining-related environmental impact assessment and waste license authorisations – with the Minister of Environmental Affairs being an Appeals Authority on mining related environmental authorisations.

The cooperative governance arrangement also aligns the simultaneous processing of air emission and water use licences for mining activities.

Further regulations are being developed and will be published in the 2015/16 financial year.

People and Parks projects

In April 2015, the Minister of Environmental Affairs launched the People and Parks projects worth more than R208 million in collaboration with the Limpopo Tourism Agency.

It was anticipated that at least 2 300 jobs will be created through the People and Parks projects to be implemented in Limpopo over two years.

The project was launched at the Lekgalameetse Nature Reserve in Tzaneen as part of government's national Imbizo Focus Week, which enables government leaders to interact with communities in different parts of the country.

As part of the project, chalets will be constructed, old and dilapidated infrastructure will be rehabilitated, perimeter fences will be erected and roads will be upgraded.

The People and Parks projects invests in infrastructure development and biodiversity conservation for economic benefits by ensuring that local communities are involved in the management of protected and surrounding areas.

South African Carbon Disclosure Project (CDP)

According to the CDP Report of 2014, companies' disclosure continued to improve compared to previous years. Over the last few years, companies have risen to the challenge of more transparent reporting and standards are high. The overall threshold score required to be in the Climate Disclosure Leadership Index (CDLI) much higher in 2014 than it was a few years ago.

JSE100 companies are generally doing well at disclosure: almost half of the companies responding scored above 90/100 (up from a median of 83 in 2013). The average disclosure score is 87/100 (up from a mean of 83 in 2013). The range of scores has significantly decreased: only 8% of companies scored between 50 and 70, and 82% of companies scored above 80.

The threshold score required to be in the CDLI, the top 10% of companies, has also increased: it is now 98, up from 97 in 2013 and 95 in 2012.

This shows the commitment of South African companies to increasing transparency, thus providing a good base for improving performance.

The overwhelming majority of reported risks (76%) are perceived as having medium to high likelihood and medium to high impact. The majority of the different risk categories, under which the risks are disclosed in the questionnaire, are also seen as medium to high impact and medium to high likelihood. While the carbon tax is viewed as the most likely and highest impact risk, the key risks are not only regulatory. Companies recognise the immediacy and impact of physical risks (such as increasing drought and extreme precipitation) and reputation risks, indicating that companies are giving the identification of risks an increased degree of strategic attention.

Companies are recognising some important climate-related opportunities. The most commonly reported opportunities relate to reputation (reported by 64% of companies), followed by changing consumer behaviour, and fuel/energy taxes and regulation (reported by 53% of companies each). The opportunities are reported to be arising within a short time horizon: 70% of reported opportunities are perceived as arising within six years and a quarter are seen as being current. Opportunities that are viewed as high impact and high likelihood (21%) are approximately the same proportion as the described risks (20%), and 78% are viewed as medium to high likelihood and medium to high impact (compared with 76% of risks).

Important dates on South Africa's environmental calendar in 2014	
17 – 23 March	National Water Week
June	Enviroment Month
1 – 7 September	National Arbor Week
6 – 10 October	National Marine Week

Role players

South African National Biodiversity Institute

In support of the 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.

The Groen Sebenza Project, launched in 2015 is 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.

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 UN Framework Convention on Climate Change (UNFCCC) to finance concrete adaptation projects and programmes in developing countries that are parties to the protocol.

The Working for the Coast programme

The Working for the Coast Programme (WftC) of the DEA was established to deal with some of the challenges in line with the Integrated Coastal Management Act of 2008. The WftC programme is informed by the broader EPWP, which is using labour-intensive methods in its implementation.

The programme is also linked to other inland EPIP aimed at street cleaning and greening, waste management, rehabilitation of degraded areas (catchments) and bio-remediation of polluted rivers.

iSimangaliso Wetland Park Authority

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

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

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

The Minister of Environmental Affairs launched the Kwelera National Botanical Garden in the Eastern Cape in September 2014. The garden will provide a tourism attraction for the Buffalo City Metropolitan Municipality and the greater East London area. The garden would play a significant role in promoting biodiversity education to surrounding communities. The new garden formed part of the South African National Biodiversity Institute Gardens Expansion Strategy, and work was underway to establish a new national botanical garden in Limpopo.

- 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 10 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.

Government has started to roll out the One Environmental System, which will initiate the streamlining of the licensing processes for mining, environmental authorisations and water use. The system represents government's commitment to improve the ease of doing business and further enhances South Africa's global competitiveness as a mining investment jurisdiction.

Under the One Environmental System, the Minister of Mineral Resources will issue environmental authorisations and waste management licences in terms of the National Environmental Management Act, 1998 (Act 107 of 1998), and the National Environmental Management: Waste Act, 2008 (Act 59 of 2008), respectively, for mining and related activities.

The botanical gardens are:

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

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.

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).

South Africa has 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 international, 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.

Revenue for SANParks increased from R1,4 billion in 2010/11 to R1,6 billion in 2014/15, mostly from tourism activities within the parks such as self-drive safaris, game viewing, accommodation tariffs, adventure activities such as guided walks and hiking, bird-watching, 4x4 trails, sight-seeing, cultural and historical experiences, mountain biking, golf, canoeing and swimming.

This revenue funds activities and projects, mostly infrastructure, which could not be accommodated in the budget allocations. Between 2010/11 and 2013/14, revenue decreased mainly due to a decline in tourism arrivals in a difficult economic climate. However, revenue is expected to grow over the medium term with an increase in the transfers from the DEA for infrastructure development and operational activities.

The national parks are:

- Addo Elephant National Park
- Agulhas National Park
- Ai-Ais/Richtersveld Transfrontier Park
- Augrabies Falls National Park
- Bontebok National Park
- Camdeboo National Park
- Garden Route (Tsitsikamma, Knysna and Wilderness) National Park
- Golden Gate Highlands National Park
- Karoo National Park
- 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.

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.

i In April 2015, the SA Agulhas II embarked on her third logistical and scientific voyage to Marion Island. Aboard the ship were researchers and participants from departments of environmental affairs and public works, the South African Weather Service and various tertiary institutions. The Marion 72 expedition team was the fourth of its kind to inhabit the new base since its commission in March 2011 and occupied it for a period of 14 months. During the voyage, scientists from various institutions in South Africa jointly continued to monitor oceanographic processes, both physical and chemical changes in planktic and benthic communities.

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.

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 Lephalale, 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.

In March 2014, World Wildlife Fund South Africa would move away from its Biodiversity and Wine Initiative label to embrace the industry-wide Integrated Production of Wine scheme's 'Sustainable Wines South Africa' seal as the standard in environmental good practice. This consolidation will promote one publically communicated certification message to assure wine lovers of the Intergrated Production of Wine accredited producers' environmental credentials. It will also assist the wine industry to grow their now well-established foundation as global leaders in environmental sustainability.

World heritage sites

A Unesco World Heritage Site 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 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 DEA, SANParks and Coal of Africa Limited signed an historical Memorandum of Agreement (MoA) as part of the environmental authorisation issued in accordance with Nema of 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 more than two 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 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.

World Oceans Day is observed internationally on 8 June. The 2014 theme was: "Together let's ensure oceans can sustain us into the future." 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.

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 given to poverty-stricken areas.

The Minister of Environmental Affairs participated in the World Leaders' Dialogue titled: "The nature of crime – Extent and impact of illegal wildlife trade", in November 2014. The event explored the causes and effects of illegal wildlife trade, and new approaches and investments to combat it.

Marine protected areas

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, 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 March 2015, World Wildlife Fund (WWF) South Africa in partnership with Local Governments for Sustainability, the City of Tshwane and Tshwane University of Technology (TUT) hosted the Earth Hour Capital Challenge, an event aimed at raising the profile of public transport as a means to support low-carbon development.

TUT students paired with WWF and City of Tshwane partners used all available modes of public transport to navigate a series of destination checkpoints across the city. Guided by the newest release of the urban transportation and journey planner app, Findmyway, the winning team was one that completed the route with the lowest carbon footprint.

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 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 NZG 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 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.

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.

The Minister of Environmental Affairs confirmed that no decision has yet been taken over the legal trade in rhino horn by South Africa. At the sixth World Parks Congress in Sydney, Australia, in November 2014, the Minister said if the country comes up with measures that completely eradicate poaching, it may not need to look at trade. The Minister also said actions at international level would further strengthen efforts to address not only rhino poaching, but the illegal wildlife trade in general.

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 83 years old in 2014, 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 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

The number of rhinos poached in 2014 tipped the 1 000 mark. A total of 1 020 rhinos were poached for their horn, more than the 1 004 rhinos poached in 2013. The largest number of rhino poached were in the Kruger National Park, where 672 rhino were poached.

A total of 110 rhino were poached in Limpopo, 84 in KwaZulu-Natal, 70 in Mpumalanga, 58 in North West and 15 in the Eastern Cape.The ongoing killing of the rhino for its horns is part of a multi-billion dollar worldwide illicit wildlife trade.

Government continued to strengthen holistic and integrated interventions and explore new innovative options to ensure the long-term survival of the species.

Government implemented integrated strategic management of rhinoceros in South Africa to address the ongoing scourge. The interventions have seen the number of individuals arrested for poaching and related activities increase. A total of 344 alleged rhino poachers, couriers and poaching syndicate members were arrested during 2014.

These arrests followed an intensification of anti-poaching actions by SANParks and the police, as well as the South African National Defence Force and provincial conservation and security officials.

South Africa's multi-disciplinary response further included the creation of an intensive protection zone within the Kruger National Park, the introduction and implementation of new technology, pro-active intelligence, improving national, regional and international collaboration, and translocating rhino to safe areas within the country, and in rhino range states.

The DEA has a number of interventions to fight rhino poaching. They include strategic translocation of rhino, increased collaboration between law-enforcement agencies, disruption of criminal syndicates and tightening ports of entry and exit to combat the smuggling of illicitly sourced wildlife parts, including rhino horns. Other interventions include: providing economic alternatives for communities vulnerable to recruitment by poachers and collaboration with range, transit and end-user states.

In February 2015, the Minister of Environmental Affairs announced a committee of inquiry to look into matters of rhino poaching, including the feasibility of trade in rhino horn. The committee of inquiry comprises stakeholders from the public and private sectors, and this includes representatives from law-enforcement agencies, SANParks, the scientific community, immigration service, revenue service, conservation industry, private wildlife owners, community organisations as well as non-governmental organisations and traditional leadership. The committee will report to the inter-ministrerial committee IMC before the end of 2015. The terms of reference of the committee include investigating, evaluating, reporting on and making recommendations relating to a diverse set of key areas.

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 DEA 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-km^2 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.

In July 2014, President Jacob Zuma launched Operation Phakisa, which is expected to play a critical role in fast-tracking delivery of the priorities outlined in the NDP. The first phase of implementing Operation Phakisa was led by the DEA. It focused on unlocking the economic potential of South Africa's oceans, which are estimated to have the potential to contribute up

Twenty bids were received during the SANParks tender process for the purchase of white rhino from the Kruger National Park. Among the objectives of the rhino sales programme, which has taken place in South Africa before, is supporting the development and growth of viable rhino populations on privately owned properties and elsewhere; provided acceptable criteria in respect of habitat and security are met.

to R177-billion to the country's GDP by 2033 compared with R54-billion in 2010.

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.

Strategic Environmental Assessment

In May 2015, the Minister of Environmental Affairs launched the commission of a strategic environmental assessment of shale gas development in South Africa.

The aim of the strategic environmental assessment is to provide an integrated assessment and decision-making framework to enable South Africa to establish effective policy, legislation and sustainability conditions under which shale gas development could occur. The strategic environmental assessment will consider both the exploration and production related activities of shale gas development across different scenarios in a holistic and integrated manner; and will include an assessment of all the material social, economic and biophysical risks and opportunities associated with the industry.

The strategic environmental assessment will be undertaken by a science council consortium, consisting of the Council for Scientific and Industrial Research (CSIR), the Sanbi and the Council for Geosciences.

The strategic environmental assessment for shale gas development was formally commissioned in February 2015 and will run for 24 months. The study area will include regions of the Karoo Basin.

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
- 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 and Township Greening Projects

The Minister of Environmental Affairs launched the Youth Jobs in Waste and Township Greening Projects in May 2014.

The projects, funded by the DEA through its EPIP aim to contribute towards poverty alleviation while empowering beneficiaries to participate in the mainstream economy.

The youth will benefit from this project through the formation of self-help groups, which will positively impact on their knowledge of financial literacy and self-empowerment.

The Youth Jobs in Waste initiative has focused on: landfill operation and management, planning administration relating to waste collection and planning and undertaking waste awareness campaigns. The people who will be assisting with the activities will be located in the municipalities for a year.

The areas of focus for the Township Greening will be the Zeerust/Litchenburg gateways into Mahikeng and the development of two community recreational parks: in the Danville suburb and one under the jurisdiction of the Barolong Boora Tshidi Traditional Council. The project will involve general landscaping, planting of indigenous trees, installation of park playground equipment, installation of street and park furniture, park bins and other activities promoting greening.

The DEA aims to create eco-friendly greener open spaces that are safe, attractively designed, well managed for the benefit of all our communities as well as promoting maximum use of alternative energy sources and promote an environment that is clean, green and healthy for all.

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.

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.

Recycling has been valued at a contribution of as much as R50 billion to the South African economy. In effect, waste is now a renewable resource and not something to throw away.

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 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 (DEROs), and defining the optimal mix of measures for achieving those DEROs, with the greatest benefit and least cost to the economy.

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, eThekwini 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.

In February 2015, the Working on Fire and Eco-Furniture programmes of the Department of Environmental Affairs conducted a test at the Landquedoc Sport Field in Stellenbosch, to reduce the spread of fire in temporary structures in informal settlements.

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
- promote awareness of the purpose and practice of environmental assessment in South Africa.

The DEA 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.

Aquaculture

Government showed its dedication to aquaculture when President Zuma launched Operation Phakisa in July 2014. The operation will look to unlock the growth potential of the country's coastline, which is in line with the NDP.

It will also implement policies and programmes faster and more effectively. As a result, it can unlock the ocean's potential to contribute up to R177 billion to the country's GDP and create as many as one-million direct jobs.

Aquaculture is a big part of that plan and government recognises the industry as a way of contributing to food security since it has shown strong growth of 6,5% per year. Operation Phakisa will look to grow all segments of the aquaculture industry, especially by creating jobs within processing and marketing.

Despite aquaculture's advantages, the wild capture sector remains fishery's biggest contributor. According to the WWF-SA, wild capture fisheries include commercial, recreational and subsistence fisheries. It estimated about 500 000 people fished recreationally in South Africa. Commercially caught line fish was about 16 000 tons, which placed pressure on fish resources.

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 longterm sustainability of the offroad 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 is focusing its attention proactively on these degraded systems and prioritising developing management plans to improve the functioning of estuaries in associated hinterlands.

The Buoy Oceans Monitoring System, which provides 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 DEA reviewed the Recreational Water Quality Guidelines for Coastal Waters. intending 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 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.

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

The group is 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 (WDCD). The theme of 2014's WDCD was ecosystem-based adaptation. With the slogan "Land Belongs to the Future, Let's Climate Proof It", the WDCD highlighted the benefits of mainstreaming sustainable land management policies and practices into collective response to climate change.

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 ratified 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 aim of the National Biodiversity and Business Network is to assist businesses from various sectors to integrate and mainstream biodiversity issues into their strategies and operations.

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 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.

South Africa and 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 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 and hippopotamus.

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 km^2. 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 km^2 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 endemicity 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 winterrainfall area with extremely dry and hot summers. Succulents with thick, fleshy leaves are plentiful. Most trees have white trunks to reflect the heat.

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

The animal life is similar to that of 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

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 between Angola, Namibia and South Africa that 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. The UNFCCC 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 greenhouse-gas (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 CSD (Rio+20), member states agreed to establish a high-level political forum that would subsequently replace the CCSD.

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 RIM process in 2012.

South Africa appointed a RIM 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.

In February 2014, South Africa hosted the fifth biennial summit of the C40 Cites Climate Leadership Group to discuss ways urban leaders can tackle the causes – and effects – of climate change. Climate change directly affects city government. Mayors of cities have the power to introduce innovative methods to combat climate change, such as installing energy-efficient LED lighting and creating bicycle lanes and bike hire programmes, to introducing bus rapid transit systems to cut down on carbon emissions.

The summit, held in Africa for the first time, brought together officials from 66 cities, representing 600 million people across the world, in a global network to share information on how they can reduce their carbon footprint. These cities produce 55% of global greenhouse gas emissions, and 21% of GDP.

Montreal Protocol on Substances that Deplete the Ozone Layer

In 2014, parties to the Montreal Protocol on Substances that Deplete the Ozone Layer celebrated the International Day for the Preservation of the Ozone Layer under the theme: "Ozone Layer Protection: The Mission Goes On."

The International Ozone Day is an annual event that commemorates the date of the signing the Montreal Protocol in 1987. The theme for the 2014 celebrations highlighted the fact that efforts to protect the ozone layer continue in earnest and encouraged action to address future challenges.

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.

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 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.

Intergovernmental Panel on Climate Change (IPCC)

In April 2014, the UN's IPCC published a ccomprehensive climate-change study, warning that storms, floods, droughts and heat waves are a growing threat. The effects of global warming are likely to be severe, pervasive and irreversible, with rising temperatures putting health, homes, food supplies and safety at risk. The IPCC is based in Geneva and has 12 full-time staff. The report was compiled by more than 300 authors from 70 countries, with contributions from thousands of experts worldwide. The report is the first of its kind to analyse rising temperatures as a series of comprehensive global risks caused by increasingly perilous levels of carbon dioxide in the atmosphere.

Job creation

Demonstrating its commitment to improving socio-economic benefits within the environmental sector, the department has created more than 65 000 work opportunities, yielding more than 34 019 full-time equivalent jobs. The targeted designated groups were women, youth and people living with disabilities.

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.