Environment

SOUTH AFRICA YEARBOOK 2011/12

South Africa has a wide range of climatic conditions and many variations in topography, such as a narrow coastal plain, a steep escarpment and a large plateau.

The country is rich in diverse species and contains almost 10% of the world's total known bird, fish and plant species, and over 6% of the world's mammal and reptile species.

The vision of the Department of Environmental Affairs is to create a prosperous and equitable society living in harmony with the country's resources. It aims to:

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

Policy and legislation

In July 2011, the National Environmental Laws Amendment Bill, 2011 was approved. It proposes amendments to certain provisions under the National Environmental Management Act (Nema), 1998 (Act 107 of 1998); the National Environmental Management: Biodiversity Act (Nemba), 2004 (Act 10 of 2004); and the National Environmental Management: Air Quality Act (AQA), 2004 (Act 39 of 2004). Amendments were identified while implementing the legislation and some originated from the process of the Department of Cooperative Governance identifying legislation that hampers service delivery.

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

The 194 parties to the United Nations Framework Convention on Climate Change agreed on a historic package of decisions known as the "Durban Platform" in December 2011 at the 17th Conference of the Parties (COP17).

Key decisions of COP17 included:

- a second commitment period of the Kyoto Protocol from 1 January 2013
- launching the Green Climate Fund
- establishing the Adaptation Committee, composed of 16 members, which will report to the COP on its efforts to improve the coordination of adaptation actions at a global scale
- setting up the Technology Mechanism, which will become fully operational in 2012
- supporting developing country action
- establishing a forum and work programme on unintended consequences of climate-change actions and policies
- reviewing the Kyoto Protocol's Clean Development Mechanism's procedures to allow carbon-capture and storage projects every five years, to ensure environmental integrity
- a significantly advanced framework for the reporting of emission reductions for both developed and developing countries was also agreed upon, taking into consideration the common but differentiated responsibilities of different countries.

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

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

South Africa and Australia are the only countries to have promulgated legislation specifically related to the World Heritage Convention, which was adopted by the UN in 1972.

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

The National Environmental Management: Waste Act, 2008 (Act 59 of 2008), came into effect in July 2009. The department had developed a draft National Waste Management System, which, among other things, responds to challenges in respect of specific categories of waste and describes the application of different instruments for each waste category.

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

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

World Summit on Sustainable Development (WSSD)

Johannesburg hosted the WSSD in September 2002. 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 biggest success was getting the world to turn the UN Millennium Declaration into a concrete set of programmes and to mobilise funds for these programmes.

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

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

National Framework for Sustainable Development (NFSD)

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

- enhancing systems for integrated planning and implementation
- sustaining the country's ecosystems and using resources sustainably
- investing in sustainable economic development and infrastructure
- creating sustainable human settlements
- responding appropriately to emerging human development, economic and environmental challenges.

Formal implementation of the action plan commenced in 2010.

In May 2011, South Africa joined the world in celebrating the International Day for Biological Diversity (IDB). The United Nations General Assembly adopted 22 May as the IDB in 1992. The theme for IDB 2011 was *Forest Biodiversity*, with the pertinent slogan, *Earth's Living Treasure*.

At the same time, the International Decade for Biodiversity was also launched. This follows the Convention on Biological Diversity's Conference of the Parties in Nagoya, Japan, where the important contribution of biodiversity to poverty alleviation and job creation was emphasised.

Biological diversity

South Africa became a signatory to the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the CBD in May 2011. South Africa is the third most biologically diverse country in the world, after Indonesia and Brazil.

These countries harbour most of the Earth's species and collectively contain more than two thirds of global biodiversity. Therefore South Africa attaches great importance to the Nagoya Protocol.

South Africa occupies only 2% of the world's surface area, but is home to nearly 10% of the world's plants (approximately 24 000 species), around 7% of the world's vertebrate species, and 5,5% of the world's known insect species.

In terms of the number of endemic species of mammals, birds, reptiles and amphibians, South Africa ranks as the fifth-richest country in Africa and the 24th-richest in the world. Marine biological diversity is also high. Over 11 000 species are found in South African waters, which is about 15% of global species, with more than 25% of these marine species (or 3 496 species) being endemic to South Africa. A high proportion are threatened, especially in river ecosystems (82%) and estuaries (77%).

Three internationally recognised biodiversity hotspots (areas with especially high concentrations of biodiversity, which are under serious threat) are found in South Africa: the Cape Floral Kingdom (equivalent to the Fynbos Biome), Succulent Karoo (shared with Namibia) and the 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, the eastern side of Swaziland and 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 can, in turn, be divided into 70 veld types.

Savanna Biome

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

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

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

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

About 8,5% of the biome is protected. The Kruger National Park, Kgalagadi Transfrontier Park, Hluhluwe-Umfolozi Park, iSimangaliso Wetland 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. The vegetation of this biome is mainly low shrubland and grass, with trees limited to water courses.

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

Overgrazing and easily eroded soil surfaces are causing this semi-desert to 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 ecosystems 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 as far as birds are concerned. Birds commonly found in the area include the black korhaan, blue crane and guineafowl.

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 fairy land. After rain, the drab landscape is suddenly covered from horizon to horizon with a multicoloured carpet of flowers (from August to October, depending on the rainfall).

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

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

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

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

Fynbos Biome

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

Fynbos is the name given to a group of evergreen 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, over 6 000 of which are endemic).

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

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

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

Forest Biome

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

Other reasonably large forest patches that are officially protected are in the high-rainfall areas of the eastern escarpment (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 in the Thicket Biome are endemic to it.

The Thicket Biome is predominantly in the Eastern Cape.

The Thicket Biome 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

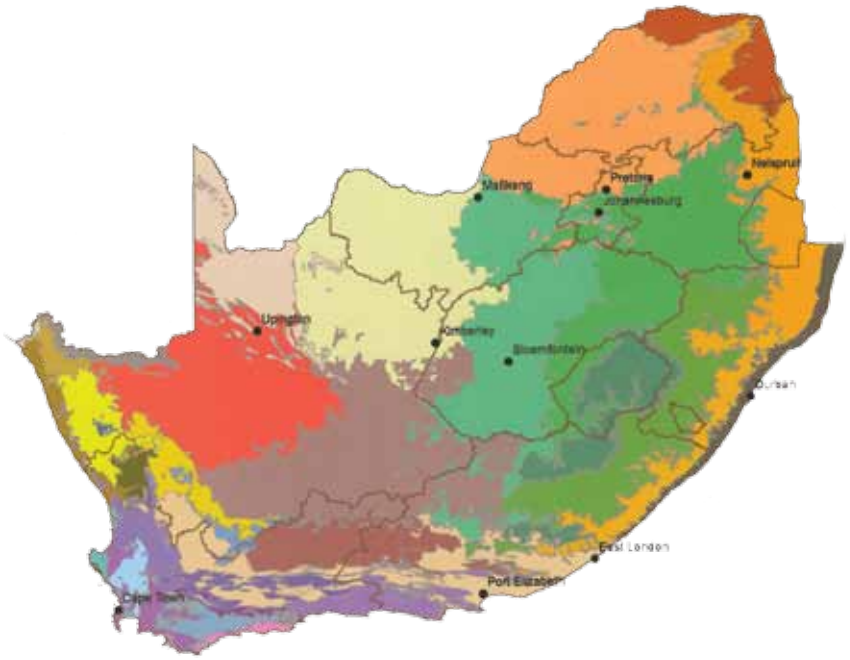
True desert is found under very harsh environmental conditions, which are even more extreme than those found in the Succulent Karoo and the Nama-Karoo biomes. The climate is characterised by summer rainfall, but also by high levels of summer aridity. Rainfall is highly variable from year to year. Desert 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,

In May 2011, South Africa's Chelsea Flower Show entry, *Botanical Landscapes*, which highlighted the indigenous plants of the Western and Northern Cape, scooped the country's 31st gold medal at the prestigious event in London.

The display showed off South Africa's fynbos, and in particular the Richtersveld sector featured some rare plants from the Karoo, unseen before at Chelsea. The Succulent Karoo Biome is the only arid biodiversity hotspot on Earth.

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
- West Strandveld 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 Duineveld Bioregion
- Albany Thicket
- Indian Ocean Coastal Belt

Source: *Vision Endangered Wildlife Trust Seventeenth Annual*

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. Common examples of such habitats are broad drainage lines or washes. Nearer the coast, coastal fog also governs the distribution of certain species commonly associated with the desert.

The Desert Biome incorporates 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.

Conserving biodiversity

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

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

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

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

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

South Africa's fynbos export market exports 4 000 tons yearly, generating over R2 billion. Interest in South Africa's indigenous plants is growing, increasing employment in the Western Cape's rural areas. Fynbos SA (Fynsa), a private company set up by the Flower Valley Conservation Trust, was expected to sell about 70 000 bouquets to the United Kingdom's Marks & Spencer alone in 2011, up from 36 000 in 2010. This was the biggest order in Fynsa's history. Fynbos makes up 0,4% of the world's total flower sales.

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

The National Biodiversity Strategy and Action Plan (NBSAP) aims to establish 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 scientifically-based systematic biodiversity assessment for the country was carried out in 2004. It set quantitative targets for the conservation of biodiversity in terrestrial, river, estuarine and marine ecosystems. The targets, based on best available science, need to inform the setting of realistic and measurable targets for the five-year action plan developed during the NBSAP process. The NBSAP identifies nine priority geographic areas, as well as priorities for freshwater, estuarine and marine ecosystems. Within these areas, important actions include limiting loss and degradation of natural habitat by integrating biodiversity considerations and municipal spatial plans and extending conservation and biodiversity management to privately- and communally-owned land. A national mining and biodiversity dialogue has been established between conservation organisations and the Chamber of Mines, which represents large mining houses. It aims to improve biodiversity practices within the industry and prevent loss of natural habitat in critical sites.

South African National Biodiversity Institute

Sanbi was formed in September 2004 through Nemba, 2004. This Act expanded the responsibility of Sanbi's forerunner, the National Botanical Institute (NBI) – which was flora-focused – to include responsibilities relating to the full spectrum of South Africa's biodiversity, while continuing to build upon the internationally respected programmes in conservation, research, education and visitor services that the NBI had developed over the past century.

Sanbi is a respected authority in research and has an unmatched research record in the indigenous, naturalised and alien flora of South and southern Africa, and beyond. Its research management covers systematics and collections expansion, conservation and applied biodiversity science, and climate change.

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

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

Sanbi manages nine national botanical gardens (NBGs) (classified as "conservation gardens") in five of South Africa's nine provinces. Together, they conserve more than 7 500 ha of natural vegetation. The gardens collectively attract over 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 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.

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

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

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

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

In September 2011, Sanbi was chosen as the country's official body to facilitate 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. Grants worth nearly US$50 million were approved in 2011.

Biodiversity research

Sanbi's biodiversity research comprises collaborative programmes set up to promote and catalyse knowledge about biodiversity. This is an essential part of the institute's aim to develop the knowledge base and information products that can inform decision-making. The broad scope of research includes the origins, composition, and functioning of biodiversity, its conservation and sustainable use, ecosystem services, and biodiversity responses to major drivers such as climate change. The research is organised into three divisions:

In May 2011, the South African National Biodiversity Institute joined the Consortium of Scientific Partners of the Convention on Biological Diversity as its first African member.

- Applied Biodiversity Research
- Biosystematics Research and Biodiversity Collections
- Climate Change and Bio-Adaptation.

Protected areas

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

By mid-2011, South Africa had 528 protected areas, of which 20 were marine, totalling 7,5 million ha or 6,2% of the 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 of Environmental Affairs has developed mechanisms for the establishment and expansion of protected areas.

The conservation of biodiversity in the country's protected areas and national park system is one of the department's key focus areas. In 2010, the department hosted the fourth People and Parks Conference in KwaZulu-Natal. Among some of the deliverables of this conference was a national co-management framework launched to provide a harmonised uniform guideline for conservation authorities and successful restitution claimants.

Communities are encouraged to play their role in protecting the environment as shareholders and in co-management agreements in support of government's rural development objectives.

Protected areas provide vital climate-change mitigation and adaptation benefits.

The department works closely with land owners 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.

National parks

South Africa's national parks are among the key drawcards for tourism in South Africa. They also play a major role in conservation.

South African National Parks (SANParks) was established in terms of the National Environmental Management: Protected Areas Act, 2003. Its mandate is to conserve, protect, control and manage national parks and other defined protected areas and their biological diversity. It is the leading conservation agency in Africa.

SANParks is committed to contributing to economic growth and transformation by creating decent jobs and sustainable and quality livelihoods. National parks are integral to the country's job-creation agenda, with over 10 000 people employed by the national parks. Through the entity's infrastructure development programme and Expanded Public Works Programme (EPWP), the organisation ensures that national parks are important components of the economic stimulus through enterprise and social development, such as job creation.

Between 2007/08 and 2010/11, SANParks acquired 147 040 ha of land. Despite the global economic downturn, average occupancy grew by

The Enyokeni Greening (Tree Planting) Project was launched by the Minister of Water and Environmental Affairs, Ms Edna Molewa, in KwaNongoma, KwaZulu-Natal, in September 2011. With a budget of R3,5 million set aside by government, the project aims to mitigate the effects of climate change, while also creating much-needed jobs.

This included direct employment of 330 people for short-term infrastructure development, skills transfer and the creation of markets for related products and services. Some 34 000 trees were expected to be planted.

7,5% (from 56,2% to 58%). In an effort to fight the escalation in rhino poaching, particularly in the Kruger National Park, a joint operation, known as the National Wildlife Reaction Unit, has been established between SANParks, the Department of Environmental Affairs, the South African Police Service, the National Prosecuting Authority, provincial conservation authorities and provincial government structures.

South Africa has the following national parks:

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

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

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

The seven TFCAs are the:

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

Biosphere reserves

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

Biosphere reserves exist in partnership with a range of interested land owners, and can incorporate development, as long as it is sustainable, while still protecting terrestrial or coastal ecosystems.

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

The World Wide Fund for Nature's Biodiversity and Wine Initiative (BWI) aims to protect natural habitats and encourage sustainable farming practices. In 2010, the organisation launched a sustainability seal, which signifies that wine is produced using the greenest techniques available. Nearly 95% of South Africa's vineyards are located in the Cape Floral Kingdom. For every hectare under grape cultivation, a matching hectare of natural vegetation is set aside for conservation. One of the most important requirements for membership of the BWI is that a farm undergoes an official process to declare that water effluent leaving the cellar is untainted with chemicals.

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

Whether they are terrestrial, freshwater, coastal or marine in nature, all are experimental areas where different approaches to integrated environmental management are tested. This is important as it helps to deepen 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, which boasts hundreds of rock-art sites.
- 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 Koeberg Nuclear Power Station falls within its boundaries.
- The Cape Winelands Biosphere Reserve includes a part of the Cape Floral Region, as well as the wine-growing region. The historic settler-founded towns of Stellenbosch, Paarl and Franschhoek lie here.
- In the north 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. San rock art abounds, as does the flora and fauna of the area.
- 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 Western Cape Biosphere Reserves Bill was introduced in the provincial Parliament in March 2011. When the Bill is passed, South Africa will be the first country in the world to have adopted specific legislation in terms of which biosphere reserves are regulated. In March 2011, the Department of Environmental Affairs submitted the Gouritz Cluster Biosphere Reserve application to Unesco for designation as a biosphere reserve in terms of the Man and Biosphere Programme.

National and cultural monuments

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

World heritage sites

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

South Africa has eight world heritage sites proclaimed by Unesco, namely:

- Robben Island
- iSimangaliso Wetland Park
- the hominid sites at Swartkrans, Sterkfontein and Kromdraai (known as the Cradle of Humankind)
- Ukhahlamba-Drakensberg Park (a mixed natural and cultural site)
- Mapungubwe Heritage Site
- Cape Floral Kingdom
- Vredefort Dome
- Richtersveld Cultural and Botanical Landscape.

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

The world heritage status of Sterkfontein's fossil hominid sites was extended in July 2005 to include the Taung skull fossil site in North West and the Mokopane Valley in Limpopo.

The Cradle of Humankind has one of the world's richest concentrations of hominid fossils 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 at the Cradle of Humankind.

Although other sites in south and east Africa have similar remains, this one has produced over 950 hominid fossil specimens.

The Richtersveld Cultural and Botanical Landscape 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.

In September 2011, the Department of Environmental Affairs, SANParks and Coal of Africa Limited signed an historical memorandum of agreement (MoA) as part of the environmental authorisation issued in accordance with Section 24G of the Nema, 1998, to ensure the integrity of the Mapungubwe Cultural Landscape World Heritage Site.

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

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 land owner in conservation. Land owners can establish a conservancy where conservation principles are integrated with normal farming activities.

Wetlands

By 2011, about 115 000 wetlands, covering over 4 million ha 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.

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

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

South Africa became a contracting party to the Ramsar Convention in 1975. The country's Ramsar sites include the following:

- Nylsvley Nature Reserve
- Blesbokspruit
- Barberspan
- Seekoeivlei
- Ukhahlamba-Drakensberg Park
- Ndumo Game Reserve
- Kosi Bay
- St Lucia
- the turtle beaches and coral reefs of Tongaland

National Geographic has named South Africa's Kirstenbosch National Botanical Garden one of the world's best picnic spots.

Kirstenbosch, which was established in 1913 to conserve and showcase the diverse flora of southern Africa, is widely celebrated as one of the great botanical gardens of the world. Picnicking is a favourite local pastime and the tranquillity and beauty of Kirstenbosch makes it one of the most scenic places to relax on the lawns and enjoy a truly South African spread.

- Wilderness lakes
- De Hoop Vlei
- De Mond (Heuningnes Estuary)
- Langebaan
- Verlorenvlei Nature Reserve
- Orange River Mouth Wetland
- Makuleke Wetlands
- Prince Edward Islands
- Ntsikeni Nature Reserve.

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

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

Working for Wetlands

Working for Wetlands is a government initiative to preserve the country's wetlands. It was launched in 2001, and since then a number of wetlands have been rehabilitated. The damage to wetlands currently done can be reversed, as is seen at Rietvlei Dam in Gauteng. The programme is implemented by Sanbi on behalf of the departments of environmental affairs; agriculture, forestry and fisheries; and water affairs. It forms part of government's EPWP, which seeks to draw unemployed people into the productive sector of the economy.

Government has pledged more than R75 million. Rehabilitation is ongoing, with attention to poverty-stricken areas being of major concern. South Africa is seen as a leader in wetlands rehabilitation.

Different wetland types supply different ecosystem services, including flood attenuation, provision of clean water and carbon storage.

Sometimes referred to as a marsh, swamp, bog or vlei, a wetland supports a range of specialised plant, insect and mammal life and also supplies food, grazing, building and craft material to people.

In 2011/12, the Working for Wetlands Programme rehabilitated 427 wetlands and created some 10 000 short-term work opportunities for people from vulnerable and marginalised communities.

Zoological gardens

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

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

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

As a member of the World Association of Zoos and Aquaria and the African Zoo Association, the NZG participates in several endangered species-management 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. (See Chapter 19: *Science and technology.*)

The 85-ha zoo in Pretoria houses 3 117 specimens of 209 mammal species, 1 358 specimens of 202 bird species, 3 871 specimens of 190 fish species, 388 specimens of four invertebrate species, 309 specimens of 93 reptile species, and 44 specimens of seven amphibian species.

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

It is committed to playing an important role in conservation projects of both indigenous and internationally endangered animals. The zoo joins other conservation organisations in programmes such as:

- 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 is a major partner.

Cape Town's Table Mountain National Park is home to the world's only jumping cockroach, which was named one of the top 10 species discoveries of the year by an international panel of experts in May 2011. *Saltoblattella montistabularis* is just 1 cm long, with powerful hind legs and bulging eyes.

Table Mountain draws more than four million tourist visits every year, and the Silvermine area where the cockroach was found, is a 10-minute drive from central Cape Town.

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

The Lichtenburg Biodiversity Conservation Centre houses, among other animals, Père David's deer, which is 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 lemur, the rare tsessebe, roan antelope and black rhino.

The De Wildt Cheetah and Wildlife Centre, situated near Pretoria, is best known for its highly successful 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 of coat patterns and colouring. De Wildt also plays a major role in breeding and releasing wild dogs. It has donated breeding nuclei of the highly endangered riverine rabbit and suni antelope to the Kruger National Park.

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

The Hoedspruit Endangered Species Centre in Mpumalanga was initially established as a breeding programme for the then endangered cheetah.

The centre caters for, among other animals, five species of vulture: Cape griffins, and white-backed, hooded, whiteheaded and lappet-faced vultures. The centre is also known for its wild-dog breeding programme.

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

In July 2011, the Addo Elephant National Park celebrated 80 years of conservation and tourism.

First proclaimed in July 1931 to save the last remaining elephants in the area, the park has, in the last decade, grown to 180 000 ha, making it the third-largest national park in the country. The conservation landmarks in the park are the:

- introduction of lions in 2003
- proclamation of a marine protected area around Bird Island in 2005
- amalgamation of the main game area and Colchester areas of the park in 2010.

The establishment of the Mayibuye Ndlovu Development Trust in 2005 and a profit-sharing agreement ensure that communities receive tangible benefits from the park.

In November 2011, Cape Town's Table Mountain was provisionally named a New 7 Wonder of Nature following a three-year global race to choose the world's seven most wonderful natural sites.

The Swiss-based New7Wonders Foundation announced the initial results of the competition in Zurich, Switzerland. Hundreds of millions of votes were cast worldwide via mobile and Internet platforms.

The seven provisional winners are: the Amazon in South America; Halong Bay in Vietnam; Iguazu Falls in Argentina; Jeju Island in South Korea; Komodo in Indonesia; Puerto Princesa Underground River in the Philippines; and Table Mountain.

Table Mountain forms part of the Table Mountain National Park, one of few conservation areas in the world that is entirely surrounded by a city.

Aquariums

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

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

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

The National Zoological Gardens' Manager of Research and Scientific Services, Professor Antoinette Kotze, received the prestigious 2011 Conservation Award of the African Association of Zoos and Aquaria in recognition of her outstanding and significant contributions to the conservation of African species.

Under her leadership, a five-year research project revealed not only that African cheetahs from various regions were distinct from one another, but the Asiatic cheetah found in Iran was a distinct subspecies from the African variety – a finding that has profound implications for global cheetah conservation management.

sharks and stingrays. The East London Aquarium turned 80 years in 2011, making it South Africa's oldest aquarium.

At the Two Oceans Aquarium, situated at the Victoria and Alfred Waterfront, Cape Town, over 3 000 specimens represent some 300 species of fish, invertebrates, mammals, birds and plants supported by the waters along the Cape coast.

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

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

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 in Pretoria houses 80 reptile species from all over the world.

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

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

The CrocRiver Enviro Park 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, it offers a close-up look at many local as well as exotic snakes, crocodiles and lizards.

Conservation challenges and initiatives

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

Environmental impact management

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

The 2010 EIA regulations:

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

The Environmental Assessment Practitioners' (EAP) Association of South Africa was launched in April 2011. This initiative aims to:

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

Red data books (RDBs) are lists of threatened plants and animals specific to a certain region. They are a vital source of information in guiding conservation decisions. South Africa has produced five RDBs dealing with each of the following: birds, land mammals, fish (fresh water and estuarine only), reptiles and amphibians, and butterflies.

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

The Department of Environmental Affairs has put in place a new and improved EIA and management regime. In addition, the department is moving towards alternative approaches to environmental impact management.

There is a concerted effort by the department to move towards an integrated permitting system. The department is already fully integrating waste and EIA permitting processes.

National Environmental Impact Assessment and Management Strategy (EIAMS)

The National EIAMS was launched in February 2010. At the 10 Years of EIA in South Africa Conference in 2008, it was agreed that the system giving effect to the objectives of Integrated Environmental Management, as indicated in Section 23 of Nema, 1998, was inadequate. It was further agreed that an EIAMS should be formulated for South Africa. A desired future was sketched and agreement reached that the strategy should be developed and implemented to map the road to achieving such a system.

The EIAMS consists of voluntary and regulated instruments in the next five years, where:

- the inefficiencies and ineffectiveness of the system will be corrected and optimised
- regulated EIA is used only when it is the most appropriate tool
- EIAM occurs within a 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.

By June 2011, 11 subtheme reports had been compiled to provide input into the strategy and would be made available for public comments.

4x4 regulations

The Strategy Towards Co-Regulation of the Off-Road Sector in South Africa aims to minimise the impact of off-road driving on the environment by giving direction to off-road users and owners to develop and use inland routes in sensitive areas responsibly. This requires that drivers and riders gain competence through appropriate training, off-road guides be qualified and registered and trails and tracks meet specified criteria. 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. The compilation of draft standards to facilitate the roll-out of this strategy was underway in 2011.

In terms of managing off-road activities in the coastal zones, the successful implementation of the 4x4 regulations that provide for the controlled use of off-road vehicles in coastal zones has shown that banning off-road vehicles has enabled several shore-breeding birds, especially the Damara tern and the African black oystercatcher, to breed successfully on beaches again.

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

Coastal management

Oceans cover three quarters of the Earth, hence the importance of protecting it.

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

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

- provide a legal and administrative framework that will promote cooperative, coordinated and integrated coastal development
- preserve, protect and enhance the status of the coastal environment as a heritage that belongs to all

South Africa's third Butterfly Census Week took place from 23 April to 1 May 2011, as part of the Southern African Butterfly Conservation Assessment Project. It is hoped that this will become a regular biannual event to collect important information, which can be used to monitor the country's butterfly population. This will help to understand the impact of land use and climate change and monitor ecosystem health.

- ensure coastal resources are managed in the interest of the whole community
- ensure there is equitable access to the opportunities and benefits to be derived from the coast give effect to certain of South Africa's international legal obligations.

This Act declares the seashore, coastal waters (including estuaries) and South Africa's territorial seas to be coastal public property. It therefore also requires the State to act as the trustee of coastal public property.

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

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

In 2011, the Department of Environmental Affairs hosted its first National Coastal Storm Surge Workshop that brought together all interested parties to share knowledge and best practices in coping with natural disasters linked to the marine environment and enhance preparedness for disasters.

In February 2011, the Deputy Minister of Water and Environmental Affairs, Ms Rejoice Mabudafhasi, launched the Buoy Oceans Monitoring System, which will provide information on the state of the oceans at Storms River in the Tsitsikamma National Park.

The first in a series of observation and monitoring platforms, it will form the basis of the South African National Oceans and Coastal Monitoring System.

In September 2011, the R11,5-million Working for the Coast: Umthamvuna to Umkomaas Project was launched, creating 112 jobs. The project was part of International Coastal Clean-Up Day (ICCD). It aims to create awareness about the importance of conserving oceans for sustainable development that contributes to economic growth and development, and for recreational purposes.

The theme for the 2011 ICCD was *Trash-Free Seas* and it was one of the country's build-up activities towards the 17th Conference of the Parties to the United Nations Framework Convention on Climate Change and the seventh Session of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol, held in Durban towards the end of 2011.

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

Between 2011 and 2012, the department deployed a range of new equipment on and around the coast of South Africa, covering the coastline, shelf waters, the deeper continental slope environment, very deep offshore regions and coastal weather systems.

National Policy for Seals and Seabirds

The National Policy for Seals and Seabirds in South Africa and the National Plan of Action for Seabirds aim to reduce the incidental catch of seabirds during longline fishing.

The plan sets out the required mitigation measures to reduce the mortality of seabirds to below an interim target level of 0,05 birds/thousand hooks by South Africa's longline fisheries for hake, tuna, swordfish, Patagonian toothfish and sharks.

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

Marine protected areas (MPAs)

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 MPA, KwaZulu-Natal
- Betty's Bay MPA, Western Cape
- Bird Island MPA, Eastern Cape
- De Hoop MPA, Western Cape
- Dwesa-Cwebe MPA, Eastern Cape
- Goukamma MPA, Western Cape
- False Bay MPA, Western Cape
- Hluleka MPA, Eastern Cape

- Robberg MPA, Western Cape
- Sardinia Bay MPA, Eastern Cape
- Stilbaai MPA, Western Cape
- Table Mountain MPA, Western Cape
- Trafalgar MPA, KwaZulu-Natal
- Tsitsikamma MPA, Western Cape
- iSimangaliso MPA, KwaZulu-Natal
- Langebaan Lagoon, Sixteen Mile Beach, Malgas Island, Marcus Island, Jutten Island MPA, Western Cape
- Pondoland MPA, Eastern Cape.

In September 2011, the Amathole MPA was announced. It is an important addition to South Africa's network of MPAs. It comprises three separate marine areas, namely the Gxulu, Gonubie and Kei areas. It will provide formal and long-term protection to the inshore marine habitat and biodiversity of the Eastern Cape. The coastline of these areas substantially coincides with terrestrial nature reserves managed by the Eastern Cape Parks and Tourism Agency, which will be the management agency for the MPA.

Marine pollution and sustainability

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

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

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

In March 2011, the Marion Island Research Base was officially handed over to the Department of Environmental Affairs. South Africa uses the base to carry out essential weather observations and various national and international scientific research programmes in the fields of oceanography, biology, geology, entomology, ornithology, botany and, from time to time, physics. Marion Island is regarded as one of the most important weather observation stations globally and used as a natural laboratory for a number of national and international research projects.

Sustainable Coastal Livelihoods Programme (SCLP)

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

Protecting the coastline

To counter illegal activities along the coastline, as well as the country's 1 155 000-km^2 Exclusive Economic Zone (EEZ), the then Department of Environmental Affairs and Tourism boosted its compliance unit with the appointment of more than 80 fishery-control officers (FCOs) and 100 honorary FCOs, after the implementation of the Honorary FCO Policy.

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

Vessel monitoring

The department is making it obligatory for fishing vessels to have satellite technology on board so that it can monitor their movements. Five coastal nations in the SADC have taken the innovative step of linking their vessel-monitoring systems. South Africa, Namibia, Angola, Mozambique and Tanzania have signed a memorandum of understanding (MoU) that will allow them to share information about the movement of licensed boats along the southern African coast.

International cooperation

South Africa is a signatory to a range of multilateral agreements related to marine resources and

protecting the marine environment. These include the London Convention on Dumping at Sea; the Marine Pollution Convention; the Antarctic Treaty; the Abidjan Convention for Cooperation in the Protection and Development of the Marine and Coastal Environment of the West and Central African Regions and Related Protocols; and the Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the East African Region and Related Protocols.

The sustainable use of the oceans is governed by the UN Convention on the Law of the Sea. South Africa is also a member of several international organisations pursuing the sustainable management of the marine environment, such as the International Marine Organisation and the International Seabed Authority.

Waste management

The Department of Environmental Affairs has developed national waste legislation that adopts the waste-management hierarchy, which focuses on waste avoidance, reducing, reusing and recycling while the recovery of material, energy and disposal should be considered as the last option.

In November 2011, Cabinet approved the National Waste Management Strategy (NWMS) for implementation. The NWMS has eight key goals, namely:

- promoting waste minimisation, re-use, 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 for and financial management of waste services
- providing measures to rehabilitate contaminated land
- establishing effective compliance with and enforcement of the Waste Act, 2008.

An action plan that sets out how to meet the goals and targets is part of the strategy, and the actions include roles and responsibilities for different spheres of government, industry and civil society.

South Africa has taken a number of steps to promote environmentally sound management of chemicals and waste, including being a party to multilateral environment agreements on chemicals and waste.

In an effort to align fragmented legislation, the department established the National Multi-Stakeholder Committee for Chemicals Management to facilitate coordination. In 2011, it was in the process of finalising the National Industrial Participation of the Stockholm Convention.

In February 2011, the National Domestic Waste Collection Standards came into effect. These standards, published under the National Environmental Management: Waste Act, 2008, aim to provide a uniform framework within which domestic waste should be collected in South Africa.

The standards aim to guide municipalities on how to provide acceptable, affordable and sustainable waste-collection services.

The standards cover the levels of service, separation at source (between recyclable and non-recyclable material), collection vehicles, receptacles, collection of waste at communal collection points and the frequency of collection.

Non-recyclable material such as perishable food waste must be collected at least weekly and recyclable material such as paper, plastic and glass must be collected once every two weeks. Municipalities have a choice to provide different types of bins, taking into consideration the types of vehicles they use. However, bins must be rigid and durable to prevent spillage and leakage.

The standards seek to build on what has already been achieved while emphasising the need to separate recyclable and non-recyclable domestic waste and the protection of human health and the environment.

The department is helping municipalities develop integrated waste management plans. These will be incorporated into integrated development planning to ensure the provision of waste services is resourced properly. In 2011/12, the department trained 450 landfill site managers.

By August 2011, government's Food for Waste Programme had created more than 3 000 job opportunities for poor and vulnerable communities.

The programme is aimed at assisting municipalities to provide waste-collection services where municipalities are unable to provide such a service, while simultaneously creating job opportunities and fighting hunger and poverty, promoting a clean environment and encouraging recycling, waste reduction and reuse.

In 2011, the programme was rolled out in 30 municipalities countrywide.

The department supported municipalities to ensure that refuse-collection services were provided adequately to all citizens.

The Department of Environmental Affairs recognises that medical waste needs a joint programme of action involving the Department of Health and other sector stakeholders. Environmental management inspectors – the Green Scorpions – were expected to deal with non-compliance.

Government established a legal framework to manage radioactive waste as set out in the Nuclear Energy Act, 1999 (Act 46 of 1999), which came into effect in February 2000. The Radioactive Waste Management Policy and Strategy for South Africa was approved in 2005. Following the approval of the policy, the National Committee on Radioactive Waste Management was established in 2006. It oversees the implementation of the policy and strategy. The National Radioactive Waste Disposal Institute Act, 2008 (Act 53 of 2008), was promulgated in January 2009.

Air-quality management and climate change

Air quality remains an important and challenging environmental issue in South Africa. The legislation governing air-quality management in South Africa is the AQA, 2004, which came into full effect in April 2010. In addition, the Department of Environmental Affairs published the 2007 National Framework for Air-Quality Management in South Africa. It is the implementation manual of the AQA, 2004 and came into effect in September 2007.

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

In June 2011, the department launched the Basa Njengo Magogo Campaign (meaning "make fire like granny"). The campaign's objectives are to:

- make people aware of cleaner fire-making methods
- provide practical training for affected communities
- encourage communities to implement the methods in their own homes when making coal fires
- address the level of air pollution in communities that use coal fires for cooking and space heating
- make communities aware of the effects of these fuels' pollution on their health and well-being.

The South African Air-Quality Information System (Saaqis) contains the latest updated data of a location and can give the status of air quality or pollution according to the chosen day and time when checked on the website (*www.saaqis.org.za*).

A number of air-quality monitoring stations report to Saaqis. Most of them belong to Mpumalanga, Ethekwini Municipality, the City of Johannesburg and the City of Tshwane.

In October 2011, the Department of Environmental Affairs hosted the sixth Annual Air-Quality Governance Lekgotla in East London, in the Eastern Cape, under the theme *Local Authorities are Taking the Lead!* This theme was chosen to encourage air-quality management officials to build momentum around the ongoing implementation of the AQA, 2004. The Air Quality Lekgotla focused on projects implemented by local authorities that will lead to measureable improvements in air quality. Topics included air-quality management regulations, planning, atmospheric emission licensing and information management with the aim of strengthening coordination within the spheres of government and developing capacity where it is required.

The lekgotla was followed by the Multi-Stakeholder Workshop, co-hosted by the National Association for Clean Air (NACA). The workshop was followed by the NACA Annual Conference.

Government and all relevant sectors of society agreed to pursue a required-by-science scenario of the long-term mitigation scenarios (LTMS) study in a bid to curb greenhouse-gas (GHG) emissions.

Based on the South African LTMS, the different options for climate-change reductions have been

In August 2011, the Department of Environmental Affairs received the Shining World Compassion Award from the Supreme Master Ching Hai International Association in recognition of its efforts to protect seals.

South Africa harvested seals until the late 1980s, but stopped this practice in 1990. A policy decision was taken to only use seals for non-consumptive use and to protect seals against natural and anthropogenic threats.

There has been a 75% increase in the number of breeding colonies in South Africa, from 23 in 1971 to 40 in 2009.

In June 2011, the South African National Parks (SANParks) received 1 000 DNA kits from the Faculty of Veterinary Sciences of the University of Pretoria (UP). The DNA Rhino Sample Kits Project is supported by private-sector companies and the UP's Faculty of Veterinary Science. The primary aim of the project is to support the investigation of poaching incidents through forensic DNA testing.

By mid-2011, there were 22 000 rhinos in South Africa. SANParks had lost 333 rhinos. By June 2011, 122 suspects had been arrested for rhino poaching.

assessed and it is acknowledged that energy efficiency is one of the most cost-effective mitigation options in South Africa. In line with this commitment to the global effort, South Africa announced that it would take nationally appropriate mitigation actions of a 34% deviation below business-as-usual emission growth trajectory by 2020, and 42% by 2025.

In October 2011, South Africa launched the National Climate Change Response Policy. The policy gives the country a clear roadmap for responding to the urgency of climate change as it pushes towards a green economy.

Urban environmental management

The Urban Environmental Management Programme (UEMP) is a partnership between 11 government institutions from all three spheres of government. The programme aims to alleviate poverty through improved service delivery within the environmental management of urban areas.

The programme began in April 2006 with a five-year budget of DKK220 million, and is a continuation of more than 10 years of environmental collaboration between South Africa and Denmark.

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

The UEMP focuses on the following:

- air quality
- environmental health
- sustainable planning
- sustainable energy management
- waste management.

Erosion and desertification

According to the UN Environment Programme (UNEP), desertification affects 900 million people in 99 countries as 24 million tons (Mt) of topsoil are 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 the total land area of South Africa is farmed. However, only 70% of this area is suitable for grazing. Overgrazing and erosion diminish the carrying capacity of the veld and lead to land degradation. This process has already claimed more than 250 000 ha of land in South Africa.

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

In January 1995, South Africa signed the UNCCD, which was ratified in September 1997. The main objectives of the convention include cooperation between governments, organisations and communities to accomplish sustainable development, especially where water resources are scarce.

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

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

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

The country has introduced legislation such as the Nemba, 2004 to promote the conservation of biodiversity and fight desertification and land degradation.

As part of the UN international campaign to tackle global environmental deterioration and in particular combat dryland degradation, which covers 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 celebration of this day marks the anniversary of the adoption of the UNCCD.

In 2011, the focus was on forests in the world's dryland areas, giving credence to the theme *Forests Keep Drylands Working*. This theme was in line with 2011 being declared the International Year of the Forests by the UN.

In South Africa, WDCD was celebrated as part of June Environment Month, focusing on the theme *Save Tomorrow, Today.*

Recycling

The Department of Environmental Affairs has an MoU with The Glass Recycling Company (TGRC). Between July 2009 and June 2010, over 295 000 tons of glass were recycled. Volumes of glass recycled have grown in excess of 100% in the last four years. The TGRC strives to increase employment opportunities with regard to collection, recycling and re-use of glass containers.

Collect-a-Can has been collecting used beverage cans for almost 20 years. It is a recovery as opposed to a profit-driven company and has proven that it is self-sustainable by managing its operations and cost structures at optimum levels.

International cooperation

United Nations Framework Convention on Climate Change

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

The convention was signed at the Rio Earth Summit in 1992 by heads of state and other senior representatives from 154 countries (and the European community), and came into effect on 21 March 1994. Since mid-1998, some 175 states have ratified or acceded to the convention.

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

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

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

All countries that have ratified the convention are required to:

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

In April 2011, the Minister of the National Planning Commission in The Presidency, Mr Trevor Manuel, was appointed to the transitional committee responsible for the design of the Green Climate Fund, which would be established under

Over the next decade, a R5-billion environmentally friendly "city" is to be built next to Durban's King Shaka International Airport. Dube City, Africa's first urban green precinct, will consist of hotels as well as a business, retail, trade and entertainment hub, and will offset the high carbon footprint created by the airport. It is part of the Dube TradePort.

The following will make Dube TradePort a green precinct:

- harvested rainwater will be used in toilets and for irrigation and will reduce the amount of water used in buildings
- cyclist facilities will be provided for building tenants and visitors
- the use of volatile organic compounds and formaldehyde will be reduced
- preferential parking will be allocated to fuel-efficient vehicles such as those that are part of a car pool and hybrid vehicles
- the head office has been registered with the Green Building Council of South Africa
- the entire green initiative aims to contribute to a productive working environment and reduce the likelihood of sick building syndrome
- natural light will be used to its maximum.

In October 2011, the Portfolio Committee on Water and Environmental Affairs held public hearings on the *National Climate Change Response Green Paper 2010*. The substantive insights offered at these hearings gave departmental officials an opportunity to incorporate substantial changes to the Green Paper and formulate an informed and improved White Paper.

South Africa's first green city development will be constructed in Pretoria alongside the N1 freeway, adjoining the Menlyn Park business and retail node. The project will be developed over the next eight to 10 years, at a cost of around R6 billion.

This development will be one of the world's 18 green cities that form part of the Clinton Foundation's Clinton Climate Initiative (CCI). The CCI works with governments and businesses across the globe and focuses largely on raising urban energy efficiency.

the UNFCCC as agreed at the 16th Conference of the Parties in Cancun in 2010.

The minister was one of 40 international representatives on the committee, which had its first meeting in Mexico City in April 2011.

The transitional committee members will be responsible for designing the Green Climate Fund – a new institution, which will manage long-term finance mobilised to enable developing countries to address climate change.

The Green Climate Fund was launched in the broad context of long-term financial support agreed at Cancun, where industrialised countries committed to a goal of mobilising $100 billion a year by 2020. These funds will be raised from a mix of public and private sources and directly linked mitigation actions, and be transparent on implementation.

The Green Climate Fund was one of a number of new institutions which Cancun agreed to launch to speed up international action. Others included a technology mechanism to spur the deployment of clean technologies, and an adaptation framework to boost international cooperation in assisting developing countries to protect themselves against the impacts of climate change.

In May 2011, a high-level meeting on climate change was held, which included ministers from Brazil, India, China and South Africa (BASIC), aimed at devising strategies ahead of the COP17 held in Durban.

It was the second BASIC ministerial meeting to take place since the COP16 in Cancun, Mexico, and also followed on similar talks held in New Delhi early in 2011.

In December 2011, South Africa hosted COP17, which gave Africa an opportunity to direct attention to the impact of climate change on the continent and the developing world. Up to 194 participants from different countries formed part of COP17.

COP 17 concluded with the Durban Package, aimed at rolling back GHG emissions and helping poorer countries cope with the impact of changing weather systems.

Commission on Sustainable Development (CSD)

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

Convention on International Trade in Endangered Species

Cites, signed by 149 countries, including South Africa, controls and in some cases prohibits trade in threatened species. Cites was established in 1975 to prevent international trade from threatening species with extinction.

Montreal Protocol

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

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

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

This formed the basis for an intensive research/evaluation project to phase out, in the short term, 20% of MBR usage, mainly in the agricultural

sector. From January 2005, all developing countries were to have reduced their respective MBR consumption by 20%, according to the Montreal Protocol phase-out timetable, and completely phase out the use of MBR by 2015.

The department has also begun a programme to phase out the consumption of hydro-chlorofluorocarbons (HCFCs), which will commence in January 2013. The Phase-Out Management Plan had been developed to define specific activities necessary to achieve the control measures envisaged in 2013 and 2015.

Both the HCFCs and MBR are to be declared, by the Minister, as national priority air pollutants in terms of Section 29(1) of the AQA, 2004.

Private-sector involvement

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

Among these are:

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

Acknowledgements

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