





Environmental management

In terms of its biological heritage, South Africa is recognised as one of the richest nations in the world.

The vision of the Department of Environmental Affairs and Tourism is a prosperous and equitable society living in harmony with its natural resources. The department manages the development and implementation of policies governing three interrelated components of South Africa's socio-economic development: tourism, the fishing industry and environmental management. Expenditure was expected to increase from R1,1 billion in 2001/02 to R1,7 billion in 2004/05 and R2,1 billion in 2007/08.

The department's mission is to lead the sustainable development of South Africa's environment by:

- promoting the sustainable development and conservation of the country's natural resources
- protecting and improving the quality and safety of the environment
- promoting a global sustainable-development agenda.

In February 2005, the Minister of Environmental Affairs and Tourism, Mr Marthinus van Schalkwyk, announced the establishment of the National Environmental Advisory Forum (NEAF).

The NEAF will play an important role in providing the minister with strategic advice on issues of environmental management from the wide range of stakeholder groupings represented. In addition, the forum will advise the minister on matters concerning environmental management and governance.

At regional level, the provincial conservation agencies are major role-players, and independent statutory organisations such as South African National Parks (SANParks) and the South African National Biodiversity Institute (SANBI) are valuable partners in the country's total conservation effort.

In accordance with the National Environmental Management Act, 1998 (Act 107 of 1998), the Committee for Environmental Co-ordination was established to harmonise the work of government departments on environmental issues and to co-ordinate environmental implementation and national management plans at provincial level. The Act sets principles for effective management of the environment, which all organs of the State have to comply with in their decision-making. The Act also provides for the NEAF.

The National Environmental Management Act, 1998 requires national and provincial departments to compile environmental implementation plans (EIPs) and environmental management plans, thus

providing a legal framework for environmental development.

One of the most far-reaching interventions regarding co-operative governance since 1994 has been the introduction of environmental impact assessments (EIAs). Some EIAs are considered at national level, but the vast majority of development applications are processed by the provinces.

The department processes 100 applications a year in terms of the EIA regulations. As part of its law-reform process, the Department of Environmental Affairs and Tourism has identified the need to revise the current approach to the regulation of EIAs.

The aims of the new draft EIA regulations are, among other things, to:

- facilitate a streamlined administrative process
- clearly specify listed activities to remove existing uncertainties
- provide for stricter application in sensitive areas
- provide a mechanism to exclude certain activities in areas which are not sensitive
- provide a mechanism for municipalities to control environmental impact in certain instances through the planning process
- provide for more appropriate public participation and the assessment of issues raised by communities.

The final draft regulations were expected to be promulgated in 2005.



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

The department has developed a series of information documents on integrated environmental management, which are available in printed and electronic format.

Policy and legislation

The peaceful transition in South Africa presented a unique opportunity for redress and recovery. Starting with the Constitution of the Republic of South Africa, 1996 (Act 108 of 1996), new policies and legislation have been developed across all sectors, with full public consultation and participation.

The National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004), aims to provide 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* and multilateral agreements such as the Convention on Biological Diversity (CBD).

South Africa is a signatory to the CBD, which provides the framework, norms and standards for the conservation, sustainable use and equitable benefit-sharing of South Africa's biological resources.

The Act facilitated the transformation of the National Botanical Institute (NBI) into SANBI.

It also enables the development of the National Biodiversity Framework that will provide an integrated, co-ordinated and uniform approach to the conservation and sustainable use of biodiversity in South Africa.

The National Environmental Management: Protected Areas Act, 2003 (Act 57 of 2003), provides for the protection and conservation of ecologically viable areas representative of South Africa's biological diversity and its natural landscapes and seascapes, and the management thereof. The Act envisages a national register of protected areas, with a simplified classification system of special nature reserves, national parks, nature reserves and protected environments.

It introduces the concept of biological diversity protection and ecosystem management for the first time. Biodiversity, conservation and ecosystem

management are noted as important aims in policy and legislation that govern marine and coastal resources, freshwater and natural forests.

It also proposes a new system of protected areas, linking various kinds of protected environments to replace the existing fragmented system.

Based on experience with biosphere reserves, and informed by the new bioregional approach to conservation (linking the protected area network along mountains, rivers, wetlands, the coastline and other areas of natural vegetation), the Act will result in an interlocking system of protected areas that explicitly encourages the inclusion of private land.

It recognises that people are the custodians of the land, that they need to be involved in the management of the protected land and that they should benefit from it.

The Act caters for concurrent competence in the management of protected land. For example, an area with national park status can now be managed by another agency, for example, a provincial parks authority. Steps have been taken to ensure that standards are upheld.

South Africa is one of only two countries in the world to have promulgated legislation specifically related to the World Heritage Convention (the other being Australia). The country's World Heritage Convention Act, 1999 (Act 49 of 1999), stipulates that all world heritage sites must have an integrated management plan in place to ensure cultural and environmental protection and sustainable development of the site.

State of the environment

The greatest challenge for South Africa and the rest of the world is to improve the quality of human life for both present and future generations, without depleting its natural resources. This can only be achieved through a healthy natural environment that supplies raw material; absorbs and treats waste products; and maintains water, soil and air quality.

Food security, water provision and climatic stability depend on having properly functioning ecosys-

tems, stable levels of biodiversity, sustainable rates of resource extraction and minimal production of waste and pollution.

To this end, the United Nations (UN) General Assembly Conference on Environment and Development adopted Agenda 21 in 1992 as the global strategy for sustainable development.

South Africa has taken several steps to implement Agenda 21 at national and local level, including reforming environmental policies, ratifying international agreements and participating in many global and regional sustainable-development initiatives.

World Summit on Sustainable Development (WSSD)

Johannesburg hosted the WSSD in September 2002.

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

Among the victories of the WSSD was the launch of over 300 partnerships, including 32 energy initiatives, 21 water programmes and 32 programmes for biodiversity and ecosystem management.

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



In March 2005, the Department of Environmental Affairs and Tourism hosted the first-ever Women and the Environment Conference in Muldersdrift near Krugersdorp, Gauteng.

In addition to assessing the contribution and role of women in this sector, the conference aimed to showcase best practice in environmental management as pioneered by women in South Africa.

Some of the key focus areas of the conference involved thematic discussions on women and waste management, women and fishing, and women and conservation.



In August 2005, the Minister of Environmental Affairs and Tourism, Mr Marthinus van Schalkwyk, handed over 18 large hand-crafted wall panels for the Judges Conference Room and entertainment area at the Constitutional Court in Johannesburg. The artwork, commissioned by the Poverty-Relief Programme of the Department of Environmental Affairs and Tourism, was created by 12 embroidery designers from the Northern Cape and six appliqué designers from Limpopo.

The designs for the embroidered panels were inspired by San rock paintings, while the appliqué designs represent life in Johannesburg.

The Poverty-Relief Programme has seen more than R836 million invested in projects since April 1999. It has resulted in the creation of more than 3 000 permanent jobs and more than 4,8 million temporary job-days (equivalent to more than 42 000 job opportunities). Of these job-days, 42% have benefited women and 22% youth.

grammes. The WSSD focused on the most marginalised sectors of society, including women, the youth, indigenous people and people with disabilities.

The Implementation Plan includes programmes to deliver water, energy, healthcare, agricultural development and a better environment for the world's poor. It also incorporates targets for the reduction of poverty and protection of the environment.

Targets set at the summit will have an enormous impact:

- the number of people without basic sanitation and access to safe drinking water will be halved by 2015
- biodiversity loss is to be reversed by 2010, and collapsed fish stocks restored by 2015
- chemicals with a detrimental health impact will be phased out by 2020
- energy services will be extended to 35% of African households over the next 10 years.

South Africa participated in the 12th session of the UN Commission on Sustainable Development (CSD) in 2004, presenting a country report that reflected a positive record of South Africa's progress in meeting the targets agreed to at the WSSD.

The 13th session of the CSD in April 2005, provided South Africa with a further opportunity to highlight the policy options and implementation actions needed at regional, country and international level to meet the Johannesburg Plan of Implementation (JPOI) targets, as well as the internationally agreed development goals outlined in the 2000 UN Millennium Declaration.

The Department of Environmental Affairs and Tourism is leading the co-ordination of South Africa's follow-up to the implementation of the JPOI adopted at the WSSD.

Biodiversity values in South Africa

			Number of species				
	Biome	Veld type	Plant	Mammal	Bird	Amphibian	Reptile
Eastern Cape	6	29	6 383	156	384	51	57
Free State	3	19	3 001	93	334	29	47
Gauteng	2	9	2 826	125	326	25	53
KwaZulu-Natal	3	19	5 515	177	462	68	86
Limpopo	2	14	4 239	239	479	44	89
Mpumalanga	2	20	4 593	160	464	48	82
Northern Cape	4	20	4 916	139	302	29	53
North West	2	10	2 483	138	384	27	59
Western Cape	6	19	9 489	153	305	39	52

Source: Department of Environmental Affairs and Tourism. Plant defined as angiosperm and gymnosperm. Data taken from the National Herbarium Pretoria Computerised Information System Database, May 2003.

Biome counts taken from Rutherford (1997) with thicket from Louw & Rebelo (1998).

Veld types taken from Acocks (1988).

A dedicated directorate for sustainable development co-ordination has been established. It focuses mainly on the promotion of national dialogue, building on partnerships with various major groups, raising awareness and ensuring international follow-up to the WSSD agreements.

National Strategy for Sustainable Development (NSSD)

South Africa is committed to meet the agreements reached at the WSSD, including the development of the NSSD.

The NSSD, a framework for the development of one of the most important targets in the JPOI, was approved by Cabinet early in 2005. The NSSD will bring together programmes like the Integrated Sustainable Rural Development Programme (ISRDP), the Urban Renewal Programme (URP) and the provincial growth and development strategies (PGDS).

Biological diversity

South Africa enjoys the third-highest level of biodiversity in the world. The country's rich natural heritage is vast and staggering in its proportions. For example, over 3 700 marine species occur in South African waters and nowhere else in the world.

The remarkable richness of South Africa's biodiversity is largely the result of the mix of tropical Mediterranean and temperate climates and habitats occurring in the country. Some 18 000 vascular plant species occur within South Africa's boundaries, of which 80% occur nowhere else. More plant species occur within 22 000 hectares (ha) of the Table Mountain National Park (TMNP) (formerly the Cape Peninsula National Park), than in the whole of the British Isles or New Zealand.

In addition to South Africa's extraordinarily varied plant life, an abundance of animal life occurs in the region. The country hosts an estimated 5,8% of the world's total mammal species, 8% of bird species, 4,6% of the global diversity of reptile species, 16% of the total number of marine fish species, and 5,5% of the world's classified insect species. In terms of the number of mammal, bird, reptile and amphibian species that are endemic to this country,

South Africa is the 24th-richest country in the world and the fifth-richest in Africa.

South Africa is home to a diversity of spiders – 66 families comprising more than 6 000 species. The country also boasts 175 species of scorpion.

South Africa's marine life is similarly diverse, partly as a result of the extreme contrast between the water masses on the east and west coasts. Three water masses – the cold Benguela current, the warm Agulhas current, and oceanic water – make the region one of the most oceanographically heterogeneous in the world. According to the *White Paper on the Conservation and Sustainable Use of South Africa's Biological Diversity*, over 10 000 plant and animal species – almost 15% of the coastal species known worldwide – are found in South African waters, with about 12% of these occurring nowhere else.

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

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

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

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

The degree to which each of these biomes is threatened varies, depending on the fertility of the soil, the economic value derived from use of the area, human population pressures and the extent to which the biome is conserved in protected areas.

Savanna biome

This biome is an area of mixed grassland and trees, and is generally known as bushveld.

In the Northern Cape and Kalahari sections of this biome, the most distinctive trees are the camel thorn (*Acacia erioloba*) and the camphor bush (*Tarchonanthus camphoratus*). In Limpopo, the portly baobab (*Adansonia digitata*) and the candle-labra 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, Greater St Lucia Wetlands Park (GSLWP) and other reserves are located in the savanna biome.

Nama-Karoo biome

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

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

bat-eared fox, black-backed jackal, ostrich, suricate and ground squirrel are typical of the area.

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

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

Grassland biome

This biome is a summer-rainfall area with heavy thunderstorms and hail in summer, and frost in winter. A number of perennial rivers such as the Orange, Vaal, Pongola, Kei and Umzimvubu originate in, and flow through, the area. Trees are scarce and are found mainly on hills and along riverbeds. Karee (*Rhus lancea*), wild currant (*Rhus pyroides*), white stinkwood (*Celtis africana*) and several acacia species are the most common.

The grassland biome has the third-largest number of indigenous plant species in the country.

Eight mammal species endemic to South Africa occur in a wild state in this biome. Two of these, namely the black wildebeest and the blesbok, occur mainly in the grassland biome.

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

Only 1,1% of the grassland biome is officially protected. The wilderness areas of the KwaZulu-Natal Drakensberg are the most significant.

Succulent Karoo biome

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

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



In May 2005, *Afrikan Dream*, South Africa's entry for the 2005 Chelsea Flower Show in London, United Kingdom, won South Africa its 27th gold medal at this annual event. South Africa has exhibited at Chelsea for 30 consecutive years.

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 Richtersveld, Tankwa Karoo and Namaqua national parks have improved the conservation status of this biome considerably.

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. This is a winter-rainfall area and the fynbos vegetation is similar to that of mediterranean regions.

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 three groups of plants, namely the protea, heathers and restio, and incorporates a diversity of plant species (more than 8 500 kinds, over 6 000 of which are endemic).

The fynbos biome's most famous inhabitant is 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 grysbok, the geometric tortoise, the Cape sugarbird and the protea seed-eater, which are endemic to the area. The mountains are the habitat of the leopard, baboon, honey-badger, caracal, rheebuck and several types of eagle and dassies.

Forest biome

South Africa has few forests. The only forests of significance are the Knysna and Tsitsikamma forests in the Western and Eastern Cape, respectively.

Other reasonably large forest patches that are officially protected are in the high-rainfall areas of the eastern escarpment, and on the eastern seaboard. Forest giants such as yellowwood

(*Podocarpus spp.*), ironwood (*Olea capensis*) and lemonwood (*Xymalos monospora*) dominate.

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

Thicket biome

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.

Desert biome

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

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



With over 500 bird species, including black coucals, narina trogons, Pel's fishing owls, crowned eagles, black eagles and the African finfoot, the Kruger National Park is a birding paradise. The park is tapping into its wealth of bird species to boost its income. The park hosts the annual Big Birding Day, which is becoming a very popular event.

The Kruger Park is home to an impressive number of species, namely 336 trees, 49 fish, 34 amphibians, 114 reptiles, 507 birds and 147 mammals.

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 to the coast, the role of coastal fog also governs the distribution of certain species commonly associated with the desert.

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

Some areas in the desert biome are formally protected in the Richtersveld National Park.

Preserving biodiversity

Biodiversity plays a crucial role in sustainable development and poverty eradication. Fundamental changes to the legislative, policy and institutional framework for natural resource management have resulted in a shift in focus from an elitist conservation approach, to a management approach based on South Africa's recognition of the contribution of biological resources to food security, science, economy, cultural integrity and well-being.

The country's conservation areas contribute to job creation and socio-economic upliftment, and

continue to serve as a foundation of the tourism industry.

South Africa is a very popular tourist destination. The main attractions are nature-based tourism facilities such as national parks and private game reserves. There are some 9 000 privately owned game ranches in South Africa, covering about 13% of the country's total land area. The contribution of these areas in maintaining South Africa's unique biodiversity is incalculable.

The Department of Environmental Affairs and Tourism hosted the first National Biodiversity Strategy and Action Plan Workshop in March 2004.

The main strategic objectives of South Africa's National Biodiversity Strategy and Action Plan are to:

- ensure that the protection of biodiversity is a priority for all South Africans and forms an integral part of all economic sectors
- enhance institutional effectiveness and efficiency to ensure good governance in the biodiversity sector
- ensure that benefits derived from biodiversity and the costs of maintaining a sustained flow of environmental goods and services are equally shared
- ensure the direct and indirect consumptive use of biological resources in a sustainable manner
- engage with the international community to promote and develop cross-boundary and international co-operation and partnerships to meet South Africa's international obligations and commitments as far as possible, within the context of national priorities and constraints.

Many successes have been achieved in South Africa by various role-players in terms of the conservation of vulnerable and endangered species, e.g. white rhinoceros, African elephant, the cheetah and the wild dog.

In April 2005, the Minister of Environmental Affairs and Tourism launched the results of the National Spatial Biodiversity Assessment, the first-ever comprehensive spatial evaluation of biodiversity throughout South Africa.

The report shows, among other things, that:

- 34% of territorial ecosystems are threatened and 5% are critically endangered



Initiatives to bring communities and youth into South Africa's national parks, and to use the parks to drive growth and employment in all provinces, include the R22-million Kids-in-Parks joint venture between South African National Parks, the Department of Education, the Department of Environmental Affairs and Tourism and Pick 'n Pay.

The initiative aims to bring about 7 500 young South Africans and 300 teachers from 150 schools over the next three years into 15 national parks across South Africa. Through other initiatives focused on empowering the youth, about 2 170 job opportunities were created for young South Africans in 2004/05, representing more than 24% of the job opportunities created by the Department of Environmental Affairs and Tourism.

- 82% of 120 rivers are threatened, and 44% critically endangered
- three of 13 groups of estuarine biodiversity are in critical danger, and 12% of marine bio-zones are under serious threat.

South Africa is the first country to include a comprehensive spatial assessment of biodiversity in its National Biodiversity Strategy and Action Plan.

Conservation areas

South Africa is committed to meeting the World Conservation Union (IUCN) target of 10% of land area under protection.

There are a number of management categories of protected areas in South Africa, which conform to the accepted categories of the IUCN.

The National Environment Management: Protected Areas Act, 2003 seeks to establish a representative system of protected areas as part of a national strategy to protect South Africa's biological diversity, and to ensure that biodiversity is able to bring about sustainable benefits for future generations.

It also enables the Minister of Environmental Affairs and Tourism to acquire private land by purchasing land rights for the creation of protected areas.

The National Environment Protected Areas Amendment Act, 2004 (Act 31 of 2004), further addresses issues of co-operative governance with provincial and local authorities. It empowers the department to conclude fair negotiations with communities and private landowners for the inclusion of some of their land in South Africa's protected areas.

Scientific reserves

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

Wilderness areas

These areas are extensive in size, uninhabited and underdeveloped, and access is strictly controlled since no vehicles are allowed. The highest manage-

ment priority is the maintenance of the intrinsic wilderness character. Examples of wilderness areas are the Cedarberg Wilderness Area and Dassen Island in the Western Cape, and the Baviaanskloof Wilderness Area in the Eastern Cape.

Marine protected areas (MPAs)

In June 2004, the Minister of Environmental Affairs and Tourism announced four new MPAs to complement and consolidate the country's existing marine and coastal conservation areas. This brought 19% of South Africa's 3 200-km coastline under protection. MPAs combine conservation with the development of tourism.

South Africa previously had 19 marine protected areas covering approximately 11% of the coastline, which stretches from the country's border with Namibia in the west to Mozambique in the east. The Tsitsikamma National Park was the first to be proclaimed, in 1964.

The new areas are Aliwal Shoal on the south coast of KwaZulu-Natal, the coastal and marine environment of Pondoland in the Eastern Cape, the Bird Island Group at Algoa Bay, and TMNP in the Western Cape.



In August 2005, the Minister of Environmental Affairs and Tourism, Mr Marthinus van Schalkwyk, announced plans for the creation of a new national park in Pondoland in the Eastern Cape.

The new national park will be focused on both conservation and ensuring local economic development and social upliftment.

The park will offer a combination of wildlife viewing, beaches and marine and estuarine escapes in close conjunction with African cultural heritage. This will build on the Pondoland Marine Protected Area, which was proclaimed in 2004. The ultimate aim is to extend the development corridor running along the south coast of KwaZulu-Natal into Pondoland. The longer-term goal is to link it with the Garden Route development corridor.

In October 2005, the minister announced plans for a new national park in the Camdeboo region in the Eastern Cape.

The MPAs do not prohibit tourism activities such as sport-diving operations, but rather aim to regulate them.

Some of the protection measures to be implemented will be restrictions for people who want to fish, as well as restrictions for stowing fishing gear when fishing with a vessel. Spear fishers will not be allowed in these areas. Scuba divers will be required to obtain permits when diving at the restricted zones in the TMNP.

The Pondoland MPA is one of South Africa's largest protected areas. Including 90 km of coastline and extending about 15 km out to sea (to the 1 000 m isobath), it will cover 1 300 km². The extremely narrow continental shelf off Pondoland marks the start of the annual sardine run, which *National Geographic* has rated as the most exciting diving opportunity in the world. The development of tourism in this impoverished region is a priority, and the establishment of the MPA is the first step in realising the potential of this scenic stretch of coastline.

The protection of the Bird Island Group (Bird, Seal and Stag islands) in Algoa Bay is the first step

in the seaward extension of the Greater Addo Elephant National Park. Bird Island is home to several species of red-data listed seabirds (such as the Cape gannet, roseate tern and African penguin), while the reefs around the island are important for abalone and linefish, many species of which are threatened.

The TMNP MPA includes all the coastal waters around the Cape Peninsula from Mouille Point in the west to Muizenberg in the east. It is the area that has the longest history of commercial fishing in South Africa.

The MPA is an extension of the TMNP. It includes six areas that are closed to fishing, but the majority of the MPA remains open to fishing. The closed areas have been located for the protection of abalone, rock lobster, linefish and penguin, and for scuba-diving.

The Aliwal Shoal, a subtidal reef situated 5 km off the KwaZulu-Natal south coast near Umkomaas, supports a spectacular coral community, including 15 species of hard corals and four species of soft corals. The diverse fish fauna is a popular attraction for scuba divers, fisherfolk and spear-fisherfolk. Many endangered species of endemic reef fish, as well as ragged-tooth and tiger sharks, are found on the shoal.



In April 2005, the United Nations Environment Programme (UNEP) gave recognition to President Thabo Mbeki and the people of South Africa for outstanding achievements in the environment field.

The Champion of the Earth Award was presented during the meeting of the UN Commission on Sustainable Development held in New York in the United States of America.

South Africa was recognised both for its own commitment to cultural and environmental diversity, and for its strong leadership role in Africa through the environmental component of the New Partnership for Africa's Development.

The many South African achievements highlighted by UNEP include the fact that South Africa had pioneered the Peace Parks initiative, brought nearly 19% of its coastline under direct protection through the declaration of four new marine protected areas, created specialist environmental courts to back up a wide range of cutting-edge environmental legislation, and was party to more than 43 multilateral environmental agreements.

National parks and equivalent reserves

SANParks manages various national parks, representative of the country's important ecosystems and unique natural features. Commercial and tourism-conservation development and the involvement of local communities are regarded as performance indicators. These areas include national parks proclaimed in terms of the National Parks Act, 1976 (Act 57 of 1976), provincial parks, nature reserves and indigenous state forests.

Some of these natural and scenic areas are extensive in size and include large representative areas of at least one of the country's biomes. Since 1994, parks under SANParks have expanded by 166 071 ha.

The national parks are: Kruger National Park; Kalahari Gemsbok National Park (part of the

Kgalagadi Transfrontier Park); Addo Elephant National Park; Bontebok National Park; Mountain Zebra National Park; Golden Gate Highlands National Park; Tsitsikamma National Park; Au-grabies Falls National Park; Karoo National Park; Wilderness National Park; West Coast National Park; Tankwa Karoo National Park; Knysna National Lake Area; Marakele National Park; Richtersveld National Park; Vaalbos National Park; Agulhas National Park; Namaqua National Park; TMNP, which incorporates the Cape of Good Hope, Table Mountain and Silvermine nature reserves; and Mapungubwe National Park.

During 2003/04, more land was bought, resulting in the expansion of the Addo Elephant and Mountain Zebra national parks in the Eastern Cape, Marakele in Limpopo, the Namaqua National Park in the Northern Cape, as well as the Cape Agulhas and Table Mountain national parks in the Western Cape.

In July 2004, the Minister of Environmental Affairs and Tourism proclaimed more than 66 480 ha of new land to be incorporated into the country's national park system.

The expansion included the Mapungubwe National Park in Limpopo, which acquired more than 1 725 ha of land; the Western Cape's Agulhas National Park, which acquired 3 636 ha; the Karoo National Park, 17 405 ha; the Namaqua National Park, 34 246 ha; Au-grabies Falls National Park, 2 121 ha; the West Coast National Park, 6 772 ha; and the TMNP, 573 ha.

The Free State Government agreed in principle to link the Qwa-Qwa Game Reserve with the Golden Gate Highlands National Park and to bring the two areas under SANParks' management.

Eventually, the consolidated park will span almost 34 000 ha of grassland.

Agreement was also reached with the Eastern Cape Government on the management of Woody Cape Nature Reserve by SANParks, as an integral part of the greater Addo Elephant National Park.

In April 2005, the minister announced the addition of the St Croix and Bird islands to the Addo Elephant National Park, as well as the official opening of the Matyholweni Rest Camp, with local communities set to benefit directly from the revenue

generated and the greater influx of tourism to the expanded park.

Visitors to Addo will now be able to experience, for the first time ever in South Africa, the Big Seven in one conservation area, with the extra attraction of whales and great white sharks. The new MPA also cements the park's eastern boundary in Algoa Bay, providing critical protection to the internationally important populations of Cape gannet and African penguin.

Camp Matyholweni, named after the Xhosa expression for 'in the bush', is a 12-unit rest facility in the new southern block of the park. The construction of the camp was made possible by a R6,5-million poverty-relief grant by the Department of Environmental Affairs and Tourism.

Trans-Frontier Conservation Areas (TFCAs)

The South African Government, through the Department of Environmental Affairs and Tourism, is involved in one of southern Africa's boldest and most ambitious programmes of establishing, developing and managing six TFCAs. South Africa is joined in this initiative by its Southern African Development Community (SADC) neighbours and



Communities bordering the Kruger National Park are expected to benefit from a memorandum of understanding (MoU) signed in February 2005 to help create job opportunities, particularly in the tourism and agriculture sectors.

The park's executive director, Dr Bandle Mkhize, signed the MoU with representatives of the Community Public-Private Partnership Programme and the Tourism Enterprise Programme.

The MoU defines the roles of each of the three organisations in meeting the objective of developing the park's neighbours.

The park already runs a number of empowerment programmes aimed at increasing general economic development in neighbouring communities.

These initiatives include a curio-selling project, a contractor-development programme and ad hoc opportunities for entrepreneurs.

partners, namely Botswana, Lesotho, Namibia, Mozambique, Swaziland and Zimbabwe.

Southern Africa's TFCAs cover almost 100 000 km² and include major biomes and eco-regions. TFCAs contribute significantly to the conservation of biodiversity and to tourism in the region. The diversity of wildlife and presence of large game are Africa's most important competitive advantages in the international tourism industry.

Since the establishment of the first TFCA in 2001, the Kgalagadi Transfrontier Park between South Africa and Botswana, tourism to the area has tripled. A process has been initiated to link the park to Namibia.

The Greater Limpopo Transfrontier Park is located between Mozambique, South Africa and Zimbabwe and includes the Kruger National Park. The Department of Environmental Affairs and Tourism projects that, once the Mozambican side has been completed, 30% of visitors (350 000 people a year) to the Kruger National Park will also travel to Mozambique, thus benefiting one of the world's poorest countries financially.

The Maloti-Drakensberg TFCA situated between South Africa and Lesotho features prehistoric rock paintings, fossils and superb skeletal dinosaur remains that attract international tourists.



On 16 June 2005, the Minister of Environmental Affairs and Tourism, Mr Marthinus van Schalkwyk, launched the first of four hoerikwaggo (sea mountain) hiking trails in the Table Mountain National Park (TMNP).

The new People's Trail forms part of the long-term plan to upgrade and reinvigorate 350 km of trails within the TMNP to help cater for the 4,5 million annual visitors.

This is the first time that TMNP offers overnight accommodation on the mountain.

The minister also launched the new Cape Town Wild Card. Based on the very successful South African National Parks Wildcard, it offers an affordable and innovative new way of accessing the TMNP. The card entitles the owner to 12 entries through any of the TMNP's pay points for a year. Other tourist attractions such as the Two Ocean's Aquarium have also come on board with discounts.

The Ais/Ais-Richtersveld TFCA is situated between South Africa and Namibia.

The proposed Limpopo/Shashe Park between South Africa, Botswana and Zimbabwe will include the important ruins on the Mapungubwe plateau. They were the site of the capital of an African empire built roughly between 1030 and 1290 AD and are thought to precede the Great Zimbabwe Ruins.

The Lubombo Transfrontier Conservation Park borders South Africa, Mozambique and Swaziland and features a level of biodiversity that is greater than that of the Kruger National Park. On the South African side, in the GSLWP, R432 million has been invested, which translates into 900 direct jobs. Further investments of R1,5 billion are intended.

The Department of Environmental Affairs and Tourism intends to create the first Transfrontier Marine Protected Area and the first Transfrontier World Heritage Site in Africa between South Africa and Mozambique, as part of the Lubombo Spatial Development Initiative.

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 include outstanding natural beauty and biological diversity, exist in partnership with a range of interested landowners and can incorporate development, as long as it is sustainable, while still protecting terrestrial or coastal ecosystems.

South Africa's four biospheres are the:

- Kogelberg Biosphere Reserve, which was registered with the UN Educational, Scientific and Cultural Organisation (UNESCO) in 1998.
- Cape West Coast Biosphere Reserve, which was listed in 2000. It covers 376 900 ha that include a number of threatened vegetation types and important bird breeding sites.
- Waterberg Biosphere Reserve that was listed in 2001 and is located in Limpopo. It covers 1,4 million ha that include the Marakele National Park and the Nylsvele Ramsar Site.

- Kruger-to-Canyons Biosphere Reserve, which was also listed in 2001, and covers more than 3,3 million ha that span the boundary between Limpopo and Mpumalanga. The core areas comprise 13 declared protected areas, with a major portion of the Kruger National Park as the largest core area.

Natural heritage sites

Initiated in 1984, the Natural Heritage Sites Programme is a co-operative venture between the Department of Environmental Affairs and Tourism, provincial nature conservation agencies, the private sector, private landowners and non-government organisations. Some 325 sites have been registered, representing more than 46 000 ha. Although no legal framework for their protection exists, owners of the sites receive a certificate of appreciation from government.

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.

In May 1997, South Africa ratified the World Heritage Convention. The South Africa World Heritage Convention Committee is responsible for the identification of possible sites in South Africa and the co-ordination of the convention.

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

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

South Africa has seven World Heritage Sites proclaimed by UNESCO, namely Robben Island; the GSWLP; the hominid sites at Swartkrans, Sterkfontein and Kromdraai (known as the Cradle of

Humankind); the Ukhahlamba-Drakensberg Park (a mixed natural and cultural site); the Mapungubwe Heritage Site; the Cape Floral Kingdom and the Vredefort Dome.

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 wide. The latter was declared a World Heritage Site at the 29th World Heritage Committee meeting held in Durban in July 2005.

Vredefort presents opportunities to engage in geological research and to explore and understand more sensitively the rich culture of the Basotho, Batswana and Khoi-San, as well as the early evidence of human cognitive and artistic endeavour of these cultures. The site is also valued for its rich biodiversity.

Achieving World Heritage Site status has added to Vredefort's economic and tourism potential.



In addition to the R159 million invested in transfrontier conservation area projects during 2004/05, a further R193 million in new projects was invested in 2005/06.

In April 2005, the Minister of Environmental Affairs and Tourism, Mr Marthinus van Schalkwyk, and the Minister of Water Affairs and Forestry, Ms Buyelwa Sonjica, signed a memorandum of understanding (MoU) that marked the single largest transfer of land to South African National Parks (SANParks).

In terms of the MoU, about 97 300 hectares (ha) of state forests, formerly managed by the Department of Water Affairs and Forestry, were earmarked for transfer to SANParks.

This included 35 756 ha of indigenous forests (the Farleigh, Diepwalle and Tsitsikamma estates), about 35 638 ha of mountain catchment area (mostly fynbos in the Outeniqua and Tsitsikamma mountains) and about 25 900 ha of land under pine plantations, which will be clear-felled, rehabilitated and transferred to SANParks over the next 15 years.

The transfer is expected to lay the foundation for the future establishment of a Garden Route mega reserve, encompassing the Tsitsikamma and Wilderness national parks and the Knysna National Lake Area, as well as forests and other public and private conservation land.

Consequently, the Department of Environmental Affairs and Tourism has allocated R18 million from its poverty-relief programme for tourism and infra-structural development at the Vredefort Dome site.

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.

By June 2005, there were 788 World Heritage Sites in 134 countries. Africa had 63 sites. A total of 154 were natural sites, 611 cultural sites and 23 were mixed sites.

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 utilisation of products on a sustainable basis in protected areas such as the Kosi Bay Lake System in KwaZulu-Natal. Nature areas in private ownership are proclaimed and managed to curtail undesirable development in areas with high aesthetic or conservation potential.

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

Wetlands

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 streambank wetlands.

South Africa became a contracting party to the Ramsar Convention in 1975. The country's Ramsar sites include Nylsvlei Nature Reserve, Blesbokspruit, Barberspan, Seekoeivlei, Ukhahlamba-Drakensberg Park, Ndumo Game Reserve, the Kosi Bay System, Lake Sibaya, the turtle beaches and coral reefs of Tongaland, the St Lucia System, Wilderness lakes, De Hoop Vlei, De Mond State Forest, Langebaan, Verlorenvlei and the Orange River Mouth Wetland.

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

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

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

South Africa celebrated World Wetlands Day on 2 February 2005 at the GSLWP in KwaZulu-Natal, when the six millionth pine tree from the eastern shores of Lake St Lucia was cut down. Commercial plantations of eucalyptus and pine trees have caused extensive ecological and social damage in that area.

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

The programme contributes directly to the objectives of the Expanded Public Works Programme (EPWP) and is a partnership between the departments of environmental affairs and tourism, of water affairs and forestry, and of agriculture.

During 2004, R40 million was utilised to employ 1 200 people for the restoration of 45 wetlands around the country.

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

In 2005, the department intensified its participation in the EPWP. In addition to the R370 million spent in 2004, another R385 million was expected to be spent in 2005/06 on poverty relief and social responsibility projects. The aim is to create more than 1,38 million temporary job days, 12 000 job opportunities, 120 000 training days and more than 300 permanent new jobs.

Botanical gardens

SANBI was established on 1 September 2004 with the renaming of the NBI in terms of the National Environmental Management Biodiversity Act, 2004.

SANBI, with its head office at Kirstenbosch National Botanical Garden in Cape Town, is an autonomous state-aided institute whose vision is to be the leading institution in biodiversity science in Africa, facilitating conservation and the sustainable development of living resources and human well-being. In addition to new biodiversity-related initiatives linked to the Act, traditional activities undertaken by SANBI include the following:

- to collect, display and cultivate plants indigenous to South Africa
- to undertake and promote research into indigenous plants and related matters
- to study, research and cultivate threatened plant species
- to promote the utilisation of the economic potential of indigenous plants
- to run environmental education programmes.

SANBI manages eight national botanical gardens in five of South Africa's nine provinces. The gardens collectively attract over one million visitors a year, are signatories to the International Agenda for Botanic Gardens in Conservation, and founding members of the African Botanic Gardens Network.

The largest garden is Kirstenbosch, situated on the eastern slopes of Table Mountain in Cape Town. It displays 5 300 indigenous plant species, and was voted one of the top seven botanical gardens in the world at the International Botanical Congress in 2000.

Kirstenbosch receives more than 720 000 visitors annually. The Kirstenbosch National Botanical Garden houses the Kirstenbosch Research Centre,

the Centre for Biodiversity Conservation, Gold Fields Environmental Education Centre, the Botanical Society Conservatory, two restaurants, a conference venue, gift shops, a coffee bar, concert venues, sculpture exhibits and the Centre for Home Gardening, which includes an indigenous retail nursery.

The other gardens in the national network are the Karoo Desert in Worcester, Harold Porter in Betty's Bay, Free State in Bloemfontein, KwaZulu-Natal in Pietermaritzburg, Lowveld in Nelspruit, Walter Sisulu (formerly Witwatersrand) in Roodepoort/Mogale City and the Pretoria National Botanical Garden.

The Pretoria National Botanical Garden houses the National Herbarium of South Africa, the largest in the southern hemisphere. Research is conducted on the evolution, diversity, distribution and relationships of southern Africa's 24 000 species of plants, based on the SANBI collection of over 1,8 million specimens in its three herbaria. There are also regional herbaria in Durban (KwaZulu-Natal Herbarium) and at the Kirstenbosch Research Centre (Compton Herbarium).

The Harold Porter Botanical Garden boasts *Disa uniflora* in its national habitat (flowering from mid-December to the end of January), as well as South Africa's national flower, the king protea (*Protea cynaroides*).

The Walter Sisulu National Botanical Garden accommodates more than 600 naturally occurring plant species and more than 230 bird species, as well as a number of reptiles and small mammals. These include jackal and antelope, which occur in the natural areas of the garden.

This garden, which receives some 170 000 visitors annually, is the fastest-growing of the gardens managed by SANBI. It covers over 300 ha and consists of landscaped and natural areas. All the garden's plants are indigenous to southern Africa.

During 2004, SANBI completed new environmental education, restaurant and visitor facilities at the Lowveld, Pretoria, Walter Sisulu and Free State botanical gardens. Many of these capital projects were co-financed by the Department of Environmental Affairs and Tourism's Poverty-Relief Unit.

SANBI is the management agency for the US\$20-million Cape Action Plan for People and the

Environment Project, which aims to conserve biological diversity within the Cape Floral Kingdom. Since 1996, SANBI has also served as the implementing agency for the US\$5-million Southern African Botanical Diversity Network Project aimed at upgrading facilities and strengthening the level of botanical expertise throughout the subcontinent. The participating countries are Angola, Botswana, Lesotho, Malawi, Mozambique, Namibia, South Africa, Swaziland, Zambia and Zimbabwe.

SANBI has also taken over the management of the Working for Wetlands Programme, with its offices now based at the Pretoria National Botanical Garden.

In addition to the herbarium and taxonomic research, the Kirstenbosch Research Centre in Cape Town is a centre of excellence for biodiversity research. The research programme focuses on the impact of climate change, invasive alien species and land-use on biodiversity, as well as the development of conservation plans for threatened ecosystems and species. The centre has developed a new vegetation map for South Africa and maintains the Protea Atlas Database, one of the most comprehensive plant databases available in South Africa.

The Leslie Hill Molecular Systematics Laboratory is one of the facilities at the Kirstenbosch Research Centre. A DNA-bank has been established at the laboratory, in collaboration with the Royal Botanic Gardens, Kew, in the United Kingdom (UK). The bank is funded by the UK-based Darwin Initiative and the objectives are to archive the DNA of at least one species of all 2 200 genera of South Africa's flowering plants, to train South African researchers and students in high-profile biotechnologies, and to produce a tree of life of South African plants.

SANBI joined the Millennium Seed Bank Project in 2000. This project is a 10-year (2000 – 2010) international programme, conceived and developed by the Seed Conservation Department at the Royal Botanic Gardens, Kew, in the UK, and managed in partnership with 20 countries worldwide. Its central aim is collecting and conserving the seed of 10% of the world's wild plant species.

In South Africa, SANBI co-ordinates this endeavour and ultimately hopes to contribute the seed of

about 2 500 of South Africa's indigenous species to this conservation effort, through the collection of verified and well-documented seed collections. This will represent about 10% of South Africa's flowering plants.

Some municipalities have botanical gardens that are not controlled by SANBI. These include the Wilds and Melville Koppies in Johannesburg, the Johannesburg Botanic Garden, the Grahamstown Botanical Garden (now managed by Rhodes University) and the Municipal Durban Botanic Gardens.

Other botanical gardens in South Africa not controlled by SANBI include the Manie van der Schijff Botanical Garden (University of Pretoria), University of Stellenbosch Botanical Garden, North-West University Botanical Garden (Potchefstroom Campus), University of KwaZulu-Natal Botanical Garden (Pietermaritzburg Campus), the Lost City Gardens (near Sun City, North West) and the Garden Route Botanical Garden.

Zoological gardens

The National Zoological Gardens (NZG) of South Africa in Pretoria celebrated its centenary in October 1999. It is the only zoo in South Africa with national status and is a member of the World Association of Zoos and Aquariums; the Pan-African Association of Zoological Gardens, Aquaria and Botanical Gardens; the International Union of Zooculturists; and the International Association of Zoo Educators.

The NZG, considered to be one of the 10 best in the world, extends over an area of about 80 ha. In 2004, the zoo attracted almost 550 000 visitors.

On 1 January 2005, the zoo's collection included 2 586 specimens of 126 mammal species, 1 425 specimens of 158 bird species, 4 189 specimens of 283 fish species, 235 specimens of 21 invertebrate species, 447 specimens of 90 reptile species, and 29 specimens of four amphibian species.

These figures comprise the animals housed at the NZG in Pretoria, as well as the two game breeding centres in Lichtenburg and Mokopane, and the satellite zoo and animal park at the Emerald Animal World in Vanderbijlpark.

In March 2004, the NZG was declared a national research facility, subject to the provisions of the National Research Foundation (NRF). All of the national zoo's assets and liabilities were transferred to the NRF with effect from 1 April 2004.

The NRF is a government agency responsible for supporting and promoting research and the provision of research facilities to facilitate the creation of knowledge, innovation and development in all fields of science and technology. (See chapter 18: *Science and technology*.)

The Johannesburg Zoological Gardens, or Johannesburg Zoo, which houses more than 10 000 animals, celebrated its centenary in 2004.

The Johannesburg Zoo is now registered as a non-profit company. The core business of the zoo is the accommodation, enrichment, husbandry and medical care of wild animals.

The zoo is also renowned for its successful breeding programmes involving several endangered South African bird species such as the wattled crane and ground hornbill.

The zoo's animals are kept in open-air enclosures, separated from the public by dry or water moats. The enclosures include the internationally acclaimed gorilla complex, the pachyderm section and the section for large carnivores.

Of particular interest are the African elephants, golden lion tamarins and sitatunga.

Breeding centres

There are a number of breeding centres in South Africa. The NZG of South Africa is responsible for the management of the Lichtenburg Game-Breeding Centre, which covers an area of some 4 500 ha, and the Game-Breeding Centre near Mokopane, covering an area of 1 334 ha. The two centres supplement the zoo's breeding programme for various endangered animals, and the zoo's own animal collection.

The Lichtenburg Game-Breeding Centre houses, among other animals, Père David's deer, 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 serves as a natural haven for waterbirds such as spoonbills, kingfishers, ibises and herons.

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

The renowned De Wildt Cheetah-Breeding and Research 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 of the *South African Red Data Book – Terrestrial Mammals* in 1986.

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

The Hoedspruit Research and Breeding Centre for Endangered Species in Mpumalanga is another well-known breeding centre. It was initially established as a breeding programme for the then endangered cheetah, but following the success of the cheetah breeding programme, it has evolved into a legitimate breeding programme for other endangered African animal species. The centre caters for, among other things, five species of vulture: Cape



In August 2005, the Department of Environmental Affairs and Tourism held a two-day community workshop on recreational and professional hunting.

Two community representatives – one from Limpopo and the other from the Western Cape – were elected to represent the voice of the communities at a public hearing to the panel of experts on recreational and professional hunting held subsequently.

The panel was appointed to advise on a proper regulatory framework for the hunting industry.

griffins, and whitebacked, hooded, whiteheaded and lappetfaced vultures. Experienced guides show visitors around the centre, where more than 70 cheetahs, including cubs, tame animals and the king cheetah can be viewed. Other attractions include an introduction to the world of the Cape hunting dog and of the vulture.

Aquaria

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

The Aquarium and Reptile Park of the Pretoria Zoo 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.

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, as well as two larger tanks that display sharks and stingrays.

East London has a smaller aquarium, which is also well worth visiting.

At the Two Oceans Aquarium situated at the Victoria and Alfred Waterfront, Cape Town, more than 3 000 specimens represent some 300 species of fish, invertebrates, mammals, birds and plants supported by the waters in and around the Cape coast. More than three million adults and 850 000 children have visited the aquarium since it opened.

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

Sea World incorporates a unique shipwreck-themed aquarium, a penguin rookery and a 1 200-seater dolphin stadium (the largest dolphinarium in Africa). It also offers edutainment tours and special interactive activities such as snorkelling and scuba diving. In addition, it features a rocky touch pool, where visitors can touch a starfish or sea cucumber with the help of specially trained guides.

Snake parks

The Transvaal Snake Park at Midrand, between Pretoria and Johannesburg, houses up to 150 species of snakes and other reptiles and amphibians from southern Africa and elsewhere. The emphasis is on the development of breeding programmes for animals in captivity.

The Fitzsimons Snake Park in Durban houses about 250 snakes, including the world's longest (reticulated python), most venomous (boomslang, puff adder and black mamba) and rarest (long-nose tree snake and Madagascar tree boa) snakes. Up to 500 snakes hatch at the park each year. A highlight of the park is the Adventure Walk that enables visitors to view a large variety of snakes that are kept in secure glass viewing enclosures. The park also offers educational, interactive snake demonstrations and junior and advanced herpetology (study of reptiles) classes.

The Port Elizabeth Snake Park at Bayworld has a wide variety of South African and foreign reptiles, including tortoises, boa constrictors, pythons, crocodiles, lizards and deadly venomous snakes such as cobras, mambas and rattlers. Rare and threatened species, including the Madagascar ground boa, are housed safely in realistically landscaped glass enclosures. The park was closed temporarily from the end of June 2005 while the complex was renovated. The completed project was estimated to cost R200 million and was expected to be opened in 2006.

The Aquarium and Reptile Park situated at the national zoo 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.

Marine resources

The South African fishing industry, which was once concentrated in the hands of a few, largely white-owned companies, has undergone intensive transformation over the past 10 years.

It is estimated that at least 60% of commercial fishing rights have been allocated to historically disadvantaged individuals (HDIs) or majority HDI-owned companies. Transformation has taken place in a very short space of time, without compromising the principle of sustainable utilisation that is fundamental to the management of fisheries. South Africa's industrial fisheries are widely regarded as being among the best-managed in the world.

The South African coastline covers more than 3 200 km, linking the east and west coasts of Africa. South Africa's shores are particularly rich in biodiversity with some 10 000 species of marine plants and animals having been recorded.

The productive waters of the west coast support a variety of commercially exploited marine life, including hake, anchovy, sardine, horse mackerel, tuna, snoek, rock lobster and abalone. On the east coast, squid, linefish and a wide range of intertidal resources provide an important source of food and livelihood for coastal communities. Marine life that is not harvested, such as whales, dolphins and seabirds, is increasingly recognised as a valuable resource for nature-based tourism.

The responsible utilisation and management of the country's marine and coastal resources is of vital importance to the well-being of South Africa's people and economy. About 29 000 South Africans, many of them from impoverished rural communities, are directly employed by the fishing industry. A further 60 000 people are estimated to be employed in related sectors.

In South Africa, the utilisation of marine resources is regulated by a rights-allocation system.

Through regular scientific research, the Department of Environmental Affairs and Tourism establishes what the optimal utilisation of each fish species should be. This is done annually and ensures that fish stocks are managed sustainably.

The department's functions include the management of commercial, subsistence and recreational fisheries, as well as a wide variety of other activities, including boat-based whale watching and shark-cage diving. Fishing vessels are licensed annually, according to their port of origin and the purpose for which they are used.

The department is also responsible for monitoring the catches of commercial, subsistence and recreational fishers; and the regulation and thorough inspection of fishing boats, fish-processing plants and other places where fish is sold or stored.

Recent developments have led to a dramatic improvement in the field of fisheries compliance:

- An observer programme has been initiated in the offshore fisheries, where on-board observers gather a wide variety of biological data and verify that regulations are adhered to on fishing vessels.
- All commercial fishing vessels are obliged to carry a vessel-monitoring system on board.
- New partnerships between the Department of Environmental Affairs and Tourism, the South African Police Service and the South African National Defence Force have increased investigations, leading to arrests and prosecutions which, in turn, have had a deterrent effect on would-be poachers.
- The first environmental court at Hermanus in the Western Cape has achieved a conviction rate of 75%. In the past, only an estimated 10% of abalone-poaching and related offences were successfully prosecuted and many cases took years to conclude. A second environmental court was opened in Port Elizabeth on 24 February 2004.
- The amending of laws has ensured that loopholes have been closed and that the severity of sanctions has been increased.
- Four purpose-built environmental-protection vessels are boosting the department's capacity to apprehend and inspect non-compliant fishing vessels.

Lilian Ngoyi, the first vessel, was launched in November 2004, followed by *Sarah Baartman* on 10 January 2005, *Ruth First* on 18 May 2005 and *Victoria Mxenge* on 23 September 2005.

In addition to performing fishery-protection duties, the vessels are equipped to conduct oil-spill counter-measure operations. The vessels are further equipped for search-and-rescue work, fire-fighting and limited towing duties. All four ships are certified for operations up to 200 nautical miles from the shore.

They monitor a wide variety of resources, including rock lobster, abalone, line fish and squid, and

carry out inspections of the demersal and pelagic fleets. The vessels are capable of operating throughout the SADC region and play a significant role in regional compliance initiatives.

They are 47 m long and 8 m wide and can reach a top speed of about 25 knots (about 40 km per hour), which is roughly twice the speed necessary to catch most poachers.

The much-larger *Sarah Baartman* carries 18 crew members, four cadets and seven fishery inspectors.

Her top speed is in excess of 20 knots. Equipped with a helicopter deck and refuelling facilities, *Sarah Baartman* can accommodate a fully laden Super Puma or Oryx helicopter. It also has hospital facilities and capacity for six 20-foot containers, which can be loaded and discharged by the vessel's own crane.

The patrol vessels are named after women who, through their courage, dedication and commitment, made a significant contribution to South Africa's liberation.

Transformation

With the publishing of the *White Paper on Marine Fisheries Policy* in 1997 and the passing of the Marine Living Resources Act, 1998 (Act 18 of 1998), the fundamental policy and regulatory framework for fisheries management in South Africa was put in place.

A serious challenge facing government after the first democratic election in 1994 was to re-allocate fishing rights (or quotas) in a way that would ensure that the underrepresentation of HDIs and HDI-owned companies in the fishing industry would be corrected.

A revised strategy was introduced in 2000 to build a rational, legally defensible and transparent allocation system to promote government's objective of transforming the fishing industry.

In April 2005, the Minister of Environmental Affairs and Tourism announced plans to reduce application fees for small-scale fisheries by as much as 83%. In the mussel and oyster fisheries, the proposed application fees were reduced from R585 to R100. Traditional line-fishers will no longer be grouped into small-scale commercial (R500) and full commercial (R6 000), but will have only one

component at an application cost of only R400 upfront, and another R204 per crew member for successful applicants.

Under the new proposals, a large company that was allocated 45 000 tons (t) and which paid an application fee of only R6 000 would now pay R2,25 million if allocated that same quantity.

Through the proposed changes, the department plans to recover the full cost of the allocation and verification process from each applicant on a pro rata basis, depending firstly on the value of the respective fishery, and secondly on the value of the right allocated.

On 30 May 2005, the minister launched the final set of 19 fishery-specific policies and one general policy that guides the allocation of long-term commercial fishing rights for periods between eight and 15 years, estimated to be worth about R70 billion.

Approved by Cabinet, these policies set the agenda for a range of post-allocation management issues affecting each commercial fishery. Most importantly, the allocation of these long-term rights is expected to bring real stability to the fishing industry, supporting transformation and smaller businesses by unlocking access to capital financing for successful applicants.

For the first time ever, policy considerations have been codified in significant detail. South Africa is one of only a handful of countries that has codified its fisheries policies, and is perhaps the only country to have done so in such detail.

This provides an unambiguous guarantee for the industry as a whole that, unless decided otherwise by the minister, the department and officials within the department are bound by the words and instructions contained in the policies. The codification therefore provides a level of certainty on critical issues that had not existed before.

The allocation of fishing rights will be managed in terms of the clustered approach to fisheries management. The 19 different fishing sectors remain grouped into four clusters. This was done in response to the call to simplify and streamline the allocation process.

The clusters allow for the design of processes that suit the different fishers involved. Cluster A

comprises the most organised and capital-intensive fisheries. Cluster B comprises those fisheries that, although fairly well organised, are significantly less capital intensive. Cluster C comprises large numbers of fishers who are poorly organised, but who have access to valuable fish stocks. Cluster D comprises those fishers who are not only poorly organised, but are also involved in very marginal fisheries. The four clusters are as follows:

Cluster A

- hake deep-sea trawl
- hake inshore trawl
- horse mackerel
- small pelagics
- patagonian tooth fish
- south coast rock lobster
- KwaZulu-Natal prawn trawl.

Cluster B

- west coast rock lobster (off shore)
- hake long line
- squid
- tuna pole
- seaweed
- demersal shark.

Cluster C

- hand-line hake
- west coast rock lobster (near shore).

Cluster D

- oysters
- white mussels
- net fishing (small nets/gillnets and beach seine/trek-nets)
- KwaZulu-Natal beach seine.

The evaluation of every application submitted will take place in terms of rational and judicially sanctioned evaluation criteria.

Deep-sea hake fishery

In 1992, only 21 predominantly white-owned and controlled companies had rights to utilise the deep-sea hake resource. By 2002, this number had more than doubled to 53 right-holders.

The Long-Term Rights Allocation Process, launched in 2005, aims to ensure that transformation achievements are maintained. It also aims to

address the viability of small operators through consolidation into fewer, but larger units.

By mid-2004, 74% of right-holders in the deep-sea hake fishery were HDI-owned and managed. In comparison, it is estimated that in 1992, HDI shareholding in the deep-sea hake fishery amounted to less than 0,5%.

Pelagic fishery

Allocation records show that 73% of right-holders in the pelagic fishery are majority HDI-owned companies. These companies hold 75% of the pelagic total allowable catch (TAC). Therefore, access to the pelagic fishery by HDIs increased tenfold, from less than 7% in 1992 to more than 70% in 2002.

South coast rock lobster fishery

The offshore nature of this fishery requires the use of large vessels (30 m – 60 m), which are expensive to purchase and operate. These vessels need to fish a relatively large quota to make their operational costs viable. This makes it difficult for smaller right-holders to participate in the fishery. In spite of these constraints, 65% of south coast rock lobster right-holders are SMMEs in joint ventures with established fishing companies. Remarkably, 77% of the south coast rock lobster resource is controlled by HDIs. This was achieved by allowing new entrants into the fishery, and through substantial changes in the ownership of the larger companies.

West coast rock lobster fishery

As many as 90% of right-holders in the west coast rock lobster fishery were classified as SMMEs in 2002. Sixty-six percent of these companies were majority HDI-owned, compared with 1992 when the majority of the lobster TAC was in the hands of white individuals and white-owned companies. Furthermore, 91,5% of fishing rights that were allocated on a limited scale were allocated to HDIs or HDI-owned SMMEs. This means that about 70% of the global west coast rock lobster TAC is HDI-controlled.

Conservation

Extending the conservation agenda is a key objective. The passing of the Coastal Management Bill

is central to this objective. The promulgation and effective management of four, and eventually five, new MPAs will bring 19% of South Africa's coastline under protection.

Subsistence fishing rights along the coasts of the Eastern Cape and KwaZulu-Natal will also be extended in future. This will allow large numbers of people to legally harvest fish. Plans to open up new commercial fisheries are developing rapidly. The aim is to expand the economy through new fisheries and to create new jobs and associated wealth.

The drive to build a marine science and management capacity of high standing that is able to play a constructive role on the African continent, is well underway. This entails, among other things, formulating an ecosystem approach to fisheries management, exploring the potential of new and underutilised fisheries, developing the legal and scientific framework that is required to boost aquaculture production in South Africa, and assisting other African nations to build equally robust fishery-management regimes.

Sustaining marine resources

Since the 1977 declaration of a 200-nautical mile (370 km) exclusive fishing zone, South Africa has adopted a policy of stock rebuilding in several of its major commercial fisheries. This policy has paid off in the hake, pelagic and rock lobster fisheries, where catches have grown steadily in recent years.

However, while South Africa's offshore fisheries may be among the best-managed in the world, a somewhat different picture has emerged for some of South Africa's inshore stocks. Several species of linefish have collapsed in recent years and the small but valuable abalone fishery is severely threatened by poaching and changing environmental conditions.

Pelagic fishery

Pelagic fish form large shoals in the surface layers of the sea – the pelagic zone where they are targeted by South Africa's purse-seine fleet. Small pelagic fish include sardines, anchovy, round herring and juvenile horse mackerel.

The pelagic fishery is the largest in South Africa in terms of catch volumes, and the second-most valuable after the demersal fisheries. Most of the

sardines caught are canned for human consumption. All anchovy, round herring and juvenile horse mackerel are reduced to fish meal, which is an important ingredient in animal feeds.

The by-catch of juvenile horse mackerel is restricted and only makes up a small proportion of the total landed pelagic catch.

The population size of anchovy, sardine and round herring increased markedly over the latter part of the 1990s, from a combined biomass of around 1,5 million tons (mt) to peak at just below 10 mt in 2001. The combined biomass remained at this high level in 2002 and 2003, a large decrease in anchovy biomass being offset by an increase in sardine abundance. Low recruitment of anchovy and sardine in 2003 and 2004, however, has since led to a decrease in overall abundance, although the total biomass is still much higher than was found in the 1980s and early 1990s.

The South African fishing industry, assisted through innovative management of the annual TAC, has made the most of the boom years. Between 2001 and 2004, the purse-seine fleet landed over half a million tons of pelagic fish annually. This feat had been recorded only five times in the past five decades.

Demersal fishery

The demersal fishery has three target species: Cape hakes (*Merluccius paradoxus* and *Merluccius capensis*), horse mackerel (*Trachurus trachurus capensis*) and sole (*Austroglossus pectoralis*). Monkfish (*Lophius vomerinus*) and kingklip (*Genypterus capensis*) are important by-catch species.

In South Africa, the Cape hakes form the basis of the country's demersal fishery, with about 160 000 t being landed each year. Hake is landed by large deep-sea trawlers, smaller inshore trawlers, long-lines and by fishers who use small boats to catch hake on hand-lines.

Deep-sea trawling is the most technologically sophisticated and the most capital- and labour-intensive of the four fishing methods. The deep-sea hake fishery catches the largest portion of the annual TAC for hake, with 6% of the TAC being allocated

to inshore fishery, and about 10 000 t being landed by line fisheries.

Hake catches have remained steady since the late 1980s. However, scientists and the fishing industry have recorded a downturn in hake total catch rates over the past three years. As a result, the TAC for hake decreased by 5 000 t over the past two years and a further decrease of 3 000 t was expected in 2005.

Lobster fisheries

West coast rock lobsters were first exploited commercially in South Africa late in the 19th century from small row-boats using hand-hauled hoopnets. Catches increased steadily during the early part of the 20th century, peaking at about 10 000 t in the early 1950s. This high level of exploitation was maintained for a while, but by 1965 it had begun to decline, even though the fishing effort was increasing.

Catches stabilised in the 1980s at about 4 000 t a year. However, by 1990, environmental and fishing-related conditions caused the natural growth rate of the west coast rock lobsters to decrease, with fewer young lobsters entering the fishery. By 1996, the TAC was decreased to just below 1 500 t. However, a stock-rebuilding strategy that was instituted in 1996, aimed at achieving a 15% recovery in stocks by 2006, paid off sooner than expected. The global TAC for west coast rock lobster increased from 3 206 t in 2003/04 to 3 527 t in the 2004/05 fishing season.

In total, 745 west coast rock lobster fishing licences were allocated in 2002, compared with only 39 right-holders in 1992. An initial 511 historically disadvantaged fishers were allocated west coast rock lobster rights on a limited scale in 2002, and a further 274 fishers were allocated commercial fishing rights for rock lobster in the newly opened fishing grounds to the east of Cape Hangklip in 2004.

The allocation of rights on a limited scale was part of a strategy by government to encourage the development of SMMEs and to meaningfully address the legitimate demands of disadvantaged fishers who depend on inshore resources such as rock lobster and abalone for their livelihoods. Each

licence is valid for four years. Right-holders are only allowed to use hoop nets to catch their quota.

South coast rock lobsters are found in deep-water off the south coast and are caught by traps that are deployed on longlines.

An assessment of the south coast rock lobster resource in 1994 indicated that the population was in decline. A programme of reducing the annual TAC was subsequently introduced. The south coast rock lobster stock has shown signs of recovery and the TAC was increased slightly in 2004. A change in the management strategy in 2000, from TAC to a combined TAC and total allowable effort, led to the cancellation of the licence of a fishing company that was responsible for systematic underreporting and overharvesting. This resulted in a decrease in fishing effort, reducing the overcapacity of vessels and other infrastructure and stabilisation of trap catch rates. Abundance of south coast rock lobster has increased by an average of 7% per year between 2001 and 2005. The TAC increased from a low of 750 t whole mass per year in 2001/02 to 840 t per year in 2004/05.

Abalone fishery

Rampant illegal fishing since 1996, exasperated by adverse ecological shifts, contributed to a severe decline in the abalone resource. This led to the closure of the recreational fishery and the setting of a global TAC of just 237 t in the 2004/05 season.

In 2004, a new system of co-management, based on the Territorial User Rights Fishery (TURF) System was introduced. According to the TURF System, all right-holders are able to catch only their quota in a stipulated zone. The aim of the TURF System is to involve right-holders and members of fishing communities in the management of the abalone fishery.

Line-fishery

Commercial fishing rights for the hake hand-line fishery and the tuna pole fishery were allocated for the first time in 2003.

These fisheries are considered to be stable, with healthy stocks. Many species in the traditional line-fishery, however, are thought to have collapsed.

In December 2000, the Minister of Environmental Affairs and Tourism declared the traditional line-fishery, which targets such species as snoek (*Thysites atun*), yellowtail (*Seriola lalandi*), kob (*Argyrosomus spp.*) and various reef-associated species, to be in a state of environmental crisis.

Many linefish stocks, including kob, rock cod (*Epinephelus spp.*), red steenbras (*Petrus rupestris*), white steenbras (*Lithognathus lithognathus*), roman (*Chrysoblephus laticeps*), daggeraad (*C. cristiceps*), poenskop (*Cymatoceps nasutus*) and slinger (*Chrysoblephus puniceus*) have collapsed.

A collapsed stock is one that has been fished to levels at which the reproductive capacity of the population has dropped to below 20% of the unfished (pristine) stock. This means that the stock cannot produce sufficient young fish to maintain the population.

The department has taken a three-pronged approach to rehabilitating these stocks.

Firstly, strategically located new MPAs allow for a higher level of stock protection by managing the marine area in terms of sanctuary or no-take zones, as well as by concentrating enforcement strategies and resources in a more defined area.

Secondly, a new line-fish management plan has been devised, which divides the fishery into three subsectors (hake hand-line, tuna and traditional line-fish). Each species has its own set of management measures aimed at reducing catch and/or effort.

Thirdly, the traditional line-fishery is managed in terms of the TAC, restricting effort in this fishery to no more than 450 vessels and 3 450 crew.

New fisheries

The department plans to develop 12 new fisheries over the next five years. Some of the fisheries that have been earmarked for development are the common octopus, ornamental fish, east coast rock lobster, sand soldier and Indian Ocean squid.

The proposed fisheries will initially be managed as exploratory or experimental fisheries to collect data for scientific analysis and ensure that the fisheries do not expand more quickly than the acquisition of information necessary for their management.

Policies and guidelines for an experimental octopus fishery were developed in 2002, and appli-

cations for experimental permits were called for in 2003. In 2004, 15 experimental permits were issued to undertake fishing at eight sites around the coast from Saldanha Bay to East London. It is anticipated that the bulk of the octopus catch will be exported to Mediterranean countries and the Far East where there is a high demand for octopus products.

The last foreign fishing boats left South African waters in January 2003, following the termination of South Africa's 25-year-old fisheries agreements with Japan and Taiwan. This paved the way for the development of a South African fishery for large pelagic fish, such as tuna and swordfish.

A policy for the allocation of 10-year fishing rights for catching large pelagic fish by longline method was finalised in 2004. In March 2005, 17 swordfish- and 26 tuna-directed rights were allocated.

Aquaculture

Aquaculture production in South Africa is in the region of 4 000 t a year, of which much is attributable to abalone and mussel production.

Since 2002, abalone farms on the south coast have collectively produced more abalone products for export than the wild abalone fishery.

These farms are creating a substantial demand for fresh kelp fronds, which are fed to cultured abalone. Research into seaweed cultivation is being undertaken by the Department of Environmental Affairs and Tourism to establish whether the nutrient-rich wastewater from abalone farms can be effectively used to cultivate seaweeds for abalone feed. If this method of culture proves to be feasible, it would have the added benefit of purifying the wastewater that is pumped out of abalone farms into the sea.

The success of the abalone farming industry has prompted new interest in the culture of fin fish in South Africa. One of the most exciting local species for the aquaculture industry is the dusky kob. Research carried out in land-based tanks and cages at Rhodes University showed that this species is easily kept in captivity, growing from fingerlings to over one kilogram in less than a year. Subsequently, a number of fishing companies and other interested

parties have taken up the challenge of farming dusky kob and are following their own paths to the commercialisation of the species.

The coast

The *White Paper for Sustainable Coastal Development in South Africa* recognises that the co-ordination between the lead department in each province, and other departments and role-players whose work forms part of the overall coastal management effort, is essential. In accordance with the White Paper, a coastal committee was established in each of the four coastal provinces. Progress has been made towards the establishment of a national coastal committee.

It was envisaged that the Coastal Management Bill, which was drafted in 2002, would be promulgated during 2005. The Bill provides for important interventions that will regulate, enhance, preserve or rehabilitate sensitive or overexploited coastal areas. It also ensures equitable access to South Africa's coastline and aligns South African legislation with international laws and conventions.

During 2004/05, a number of initiatives were implemented under the Coastcare banner. These included the formulation of interpretive signage for the coast, the Adopt-a-Beach Programme, and the Coastcare Induction Programme. Adopt-a-Beach aims to increase awareness of coastal-management issues among participant groups, while the induction programme is aimed at building capacity among provincial and local authorities.

In May 2005, South Africa hosted the international Blue Flag Conference in Durban. South Africa was one of the first countries to join the *Blue Flag* Campaign, which is aimed at excellence in beach management and the promotion of tourism. South Africa's beaches are rated amongst the best in the world.

The Blue Flag beaches for 2004/05 were:

- Umhlanga Rocks main beach
- South Beach, Durban
- Hibberdene Beach, KwaZulu-Natal south coast
- Lucien Beach, KwaZulu-Natal south coast
- Margate
- Ramsgate

- Marina/San Lameer Beach, KwaZulu-Natal south coast
- Well's Estate, north of Port Elizabeth
- Humewood, Port Elizabeth
- Dolphin Beach, Jeffrey's Bay
- Grotto Beach, Hermanus
- Kleinmond Beach, near Hermanus
- Mnandi Beach, Strandfontein
- Clifton 4th Beach, Cape Town.

More beaches were added to the list at the end of 2005

Other coastal projects being run by the department include local demonstration projects and sustainable coastal livelihood projects that are being funded by the British Department for International Development.

The proliferation of off-road vehicles in South Africa has created a variety of negative environmental impacts. Bird and turtle nesting areas are particularly susceptible to damage from off-road vehicles, as are certain coastal land forms such as dunes, salt marshes, estuarine sand and mud flats.

The off-road vehicle regulations promulgated by the Minister of Environmental Affairs and Tourism in 2001 were amended during 2004 to increase their effectiveness and ease implementation.

The monitoring of stretches of coast has indicated that the banning of off-road vehicles has enabled several shore-breeding birds – especially the damara tern and the African black oystercatcher – to breed successfully once more. The ban has enabled the damara tern to complete breeding far earlier in the season than in other monitored years.



Against the background of South Africans' concerns about the use of genetically modified organisms, in June 2005, the Department of Environmental Affairs and Tourism established the Directorate: Bio-Safety to co-ordinate and support its work in implementing the Cartagena Protocol on Bio-Safety, and announced that the South African National Biodiversity Institute would work to expand and resource its own bio-safety capacity.

Bird counts have also shown a marked increase in the numbers of sanderlings, common terns, and crowned and blacksmith plovers. The number of birds counted at Bird Island in Lamberts Bay fell after the ban was imposed. Scientists propose that Bird Island acted as a refuge for these birds prior to the ban on off-road vehicles coming into force.

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

Conservation challenges

South Africa faces many of the problems experienced by developing countries, in which rapid industrialisation, population growth and urbanisation pose a threat to the quality of the environment.

The department is reforming environmental law to introduce reform in biodiversity conservation, pollution, waste management and environmental planning.

Climatic and atmospheric change

In South Africa, climate change is evident and will continue, even if greenhouse gas (GHG) concentrations are stabilised. As such, it will continue to undermine sustainable development. Expanded desertification in the semi-arid areas of the country is already a feature of the South African landscape. Climate-change modelling suggests a reduction of the area covered by the current biomes in South Africa by 35% to 55% in the next 50 years.

To address climate-change challenges, government developed the National Climate Change Response Strategy. The strategy, launched on 7 October 2004, provides a comprehensive framework for dealing with climate-change issues in South Africa. The approach used in developing this strategy was to ensure, as far as possible, that climate-change response actions in South Africa facilitate sustainable development.

Government approved accession to the Kyoto Protocol of the UN Framework Convention on

Climate Change in March 2002, demonstrating South Africa's commitment to further enhance the effectiveness of environmental legislation.

In August 2005, the Minister of Environmental Affairs and Tourism attended the Greenland Dialogue, a week-long international ministerial meeting to discuss the Kyoto Protocol and climate change. Hosted by the Danish Ministry of the Environment, the Greenland Dialogue followed discussions about climate change at the G8 Heads of State in July 2005. Minister Van Schalkwyk was also invited to the follow-up meeting of the G8 held in London in November 2005 as part of the build-up to the first international meeting of parties under the Kyoto Protocol held in December 2005.

The Kyoto Protocol is a legally binding instrument whereby developed countries undertake to reduce GHG emissions by at least 5% of their 1990 levels. One of the protocol's features is the incorporation of market-based mechanisms designed to allow developed countries to achieve their required emission reductions at the lowest possible cost.

In July 2005, the Department of Environmental Affairs and Tourism announced that Cabinet had approved actions that would help it implement the Climate Change Response Strategy. These included a conference of African scientists and a national conference on climate change held back-to-back with a meeting of all African ministers responsible for the environment.

The second action was a process of scenario-planning to examine the different international models being proposed to reduce GHG emissions. South Africa performed the GHG Inventory in 2005 and is working towards reducing energy demands by 12% by 2015 through the more efficient use of power.

The department is operating three climatic change projects. A sum of US\$5 million has been donated to South Africa by the United States of America (USA) in terms of the USA-South Africa Bilateral Agreement on Climate Change Support.

Erosion and desertification

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 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 Convention to Combat Desertification, which was ratified on 30 September 1997. The main objectives of the convention include co-operation 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 co-ordinator for the Valdivia Group for Desertification. The group consists of countries in the southern hemisphere, namely Australia, New Zealand, Argentina, Chile, Uruguay, South Africa and Brazil, whose aim it is, among others, to foster scientific and technological co-operation.

In June 2005, South Africa marked the World Day to Combat Desertification, which the United Nations Convention to Combat Desertification (UNCCD) announced and inaugurated, to raise awareness of the effects of land degradation.

In 2002, during the WSSD, the UNCCD was identified as one of the important instruments at the disposal of the international community for food security and for eradicating poverty in arid, semi-arid and subhumid areas, of which South Africa is one.

To address land degradation, government has committed to the Millennium Development Goals, including the overarching goal of halving poverty by 2015. The Department of Environmental Affairs and Tourism has set aside R34 million to address land degradation through community-based natural

resource management projects throughout the country from 2005 to 2007.

Waste management

The Department of Environmental Affairs and Tourism takes overall responsibility for integrated pollution and waste management. Within the framework of achieving this, the department, with assistance from the Danish Government, completed the National Waste Management Strategy in 1999.

The department has prioritised four projects within the framework of the National Waste Management Strategy:

- recycling
- waste information system
- healthcare waste
- capacity-building.

Central to these are pilot projects that are being set up countrywide. The department welcomes partnerships with business to ensure that these projects are successful and become a core of better waste management in South Africa.

An agreement containing regulations governing plastic shopping bags was signed in September 2002 by the Minister of Environmental Affairs and Tourism and representatives from various labour and business organisations.

The agreement, which came into effect on 9 May 2003, stipulates that the thickness of plastic bags be 30 microns. However, manufacturers will be allowed to continue using their existing machinery to make bags of 24-micron thickness for the next five years before having to comply with the 30-micron standard.

The agreement states that printing will only be allowed on 25% of the surface area if the ink is not environmentally friendly. In situations where the ink is acceptable, this area can be increased to 50%. The department established a toll-free line to deal with queries about plastic bags.

The plastic bags agreement and supporting regulations have dramatically decreased the environmental impact of this highly visible waste stream, with a 50% reduction in the consumption of plastic bags since the introduction of the regulations.

As part of the implementation of the plastic bag regulations, Buyisa-e-Bag, a non-profit-making company was set up to promote waste minimisation and awareness initiatives in the plastics industry. The company is expected to expand collector networks and create jobs, as well as kick-start rural collection SMMEs and create additional capacity in non-governmental organisations.

Work is in progress to follow this success with targeted and customised agreements in respect of other problem waste streams, including tyres and glass.

The compliance and enforcement of the regulations have been assigned to the South African Bureau of Standards.

Water-quality management

The Directorate: Water-Quality Management of the Department of Water Affairs and Forestry is responsible for the quality management of national water resources in South Africa.

Water-quality management involves the maintenance of the fitness of water resources for use on a sustained basis, by achieving a balance between socio-economic development and environmental protection. From a regulatory point of view, water-

quality management entails the ongoing process of planning, development, implementation and administration of water-quality management policy; the authorisation of water-uses that have, or may potentially have, an impact on water quality; as well as the monitoring and auditing of the aforementioned.

The National Water Act, 1998 (Act 36 of 1998), further enables the Department of Water Affairs and Forestry to manage water quality through source-directed and resource-directed measures. Source-directed measures include the issuing of licences to water users with a potential impact on the resource.

The Act requires that all significant water resources be classified in accordance with the prescribed classification system. (See chapter 23: *Water affairs and forestry*.)

Air pollution

The National Environment Management: Air Quality Act, 2004 (Act 39 of 2004), was promulgated in 2005. The Act, which repealed the Atmospheric Pollution Prevention Act, 1965 (Act 45 of 1965), seeks to give effect to the integrated pollution and waste-management policy to ensure that all South Africans have access to clean air.

The passing of the Act was significant because for the first time in its history, South Africa has in place the basis for scientifically setting minimum air-quality standards and for punishing those who continue to pollute the air.

The next challenge is to create the capacity at provincial and local levels to implement and enforce the new standards, and to create awareness and understanding of the new legislation. In 2005, the Department of Environmental Affairs and Tourism launched a series of community fresh-air izimbizo involving communities across South Africa who are worst-affected by air pollution.

It was envisaged that in 2005, implementation of the new air-quality legislation would be started, draft ambient air-quality standards for comment promulgated, existing air-quality permits reviewed, and the Vaal Triangle declared a priority area for action in terms of the Act. These actions will eventually result in major improvements in South Africa's air quality



In March 2005, the Department of Environmental Affairs and Tourism, the provincial Department of Health in the Western Cape, the City of Cape Town and a host of coastal local governments, intensified efforts to inform coastal communities, recreational fishers and the public about the effects of the toxic red tide that had occurred along the west coast.

Red tides are natural phenomena that usually occur because of abnormally high production of plankton, following periods of coastal up-welling. Shellfish such as mussels, clams, bait and oysters are particularly vulnerable to red tides because they filter feed.

Collecting and consuming any shellfish brought to shore by a toxic red tide poses a serious health and safety risk to humans.

During the red tide, the department deployed its Coastcare teams along the affected coast to inform communities and the public.

and will consequently have major public health benefits.

The department was expected to appoint a service-provider by the end of July 2005, to identify the top 50 air-polluting industries or sectors in South Africa. Once identified, the department would, in partnership with provinces and local councils, target these industries to completely review their air-pollution permit conditions.

The review of permit conditions will be an interim measure to address existing air-quality problems in the short term, and under the older laws, while the capacity is being created in provincial and local authorities to implement and enforce the provisions and standards of the Air Quality Act, 2004.

At least 30 air-quality licensing officers were expected to be trained in each province to build the skills needed to apply the new Act.

Marine pollution

More than 80% of marine pollution originates from land-based sources such as pipeline discharges, rivers and stormwater run-off.

There are many places where water or water containing waste is discharged into the sea. Forty sea outfalls have been formalised through exemptions issued by the Department of Water Affairs and Forestry in terms of the Water Act, 1956 (Act 54 of 1956).

The same principles used for the issuing of other water-use licences apply to licences for sea outfalls. Such effluents include raw and treated sewage, industrial effluents, or a mixture of the two. In the past, many of these discharges were made into the surf zone, or even onto the shore, but the current tendency is to extend the pipelines further offshore. Permit conditions generally include the monitoring of adverse effects of such discharges in the marine environment.

An increasing source of concern is non-point-source pollution, especially pollution originating from the burgeoning informal settlements that form part of many coastal cities. Such pollution is generally the result of inadequate sanitation and other infrastructure, and is very difficult to control or monitor.

Shipping also contributes significantly to marine pollution, particularly regarding specific types of pol-

lutants. Of the estimated 6,1 million mt of oil entering the oceans every year, some 45% originates from shipping activities.

The balance comes from industrial discharges, urban run-off, and oil exploration and production – which contributes only 2%. Of the pollution emanating from shipping activities, the majority comes from vessel operations, with only 12% from tanker accidents.

Nevertheless, due to the notorious sea conditions along its coastline, South Africa has experienced a number of major oil spills, and, as a consequence, has a well-developed response capability. This includes contingency plans, salvage tugs, dispersant spraying vessels, a reconnaissance aircraft and a stockpile of oil-spill-response equipment.

Other pollutants linked to the operational activities of ships include sewage and garbage, ballast water discharges, air pollution, and cargoes which enter the sea through accidents. Sewage, garbage and air pollution are regulated by annexes to Marpol, an international convention controlling pollution from ships, to which South Africa is a party. New regulations to control ballast water discharges are being developed.

A major concern is the translocation of alien species, including pathogens, which may have serious ecological, social (public health) and economic consequences. South Africa is involved in an international project aimed at implementing international guidelines on ballast water management in developing countries.

Another potential source of marine pollution is the dumping of waste at sea. This activity is regulated under the Dumping at Sea Control Act, 1980 (Act 73 of 1980), and, since 1995 has excluded industrial waste. The main categories of waste dumped in South Africa are dredged material from the ports; obsolete vessels; and, occasionally, spoiled cargoes.

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

WIO-LaB was launched at Robben Island on 5 November 2004. The WIO-LaB Project deals with the protection, prevention and management of marine pollution from land-based activities.

The commitment given to this project by the main donors, the United Nations Environmental Programme (UNEP) and the Global Environmental Facility (GEF), was evident in the appointment of a regional project manager in February 2005. Two task teams were also appointed at regional level, namely the Municipal Waste Water and the Physical Alterations and Destruction of Habitats task teams.

In May 2005, a WIO-LaB steering committee was established at a meeting in Tanzania, and in June 2005, a legal task team was established at a meeting in Madagascar. By August 2005, a process to appoint two legal experts to deal with local issues on the implementation of the WIO-LaB projects was underway.

Task teams were expected to be established in South Africa by September 2005 to develop policies to:

- reduce stress to the ecosystem by improving water and sediment quality
- identify the coastal hot spots for pollution
- recommend the best practices for dealing with pollution from land-based activities
- develop and implement the action plan.

UNEP, UNESCO and GEF reserved R 22 071 725 for the implementation of WIO-LaB for the period 2005 to 2008.

Chemicals

Although relatively small by international standards, the chemical industry is a significant player in the South African economy, contributing about 5% to gross domestic product and providing employment to about 200 000 people. The industry produces 1 301 t of primary and secondary process chemicals annually, making it the largest of its kind in Africa.

Several steps have been taken to align current legislation with the Constitution of the Republic of South Africa and with global chemicals management:

- A special unit has been set up in the Department of Environmental Affairs and Tourism to implement a system aimed at preventing major industrial accidents, as well as systems for emergency preparedness and response.
- The minister has initiated an integrated safety, health and environment approach for the

management of chemicals in South Africa. This government-level initiative, funded by the UN Institute for Training and Research, will involve a multi-stakeholder forum, including labour representatives, aimed at integrating legislation.

The department has embarked on a process to develop the South African National Chemicals Profile. This is intended to contribute to a better understanding of the problems relating to the management and impact of chemicals. It will also help to identify important gaps and weaknesses in the existing system, as a first step in defining whether further efforts may be required.

The development of the profile was motivated by the recommendations of the International Programme on Chemical Safety, as a follow-up to the Rio Declaration on Environment and Development in 1992.

South Africa has signed the Stockholm Convention on Persistent Organic Pollutants and the Rotterdam Convention on Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade.

Recycling

Almost every type of paper produced in South Africa has a recycled content. Each ton of waste paper that is recycled saves about 17 pine trees, and a ton of recycled paper saves 3 m³ of landfill space. South Africa saves 10 million trees annually.

Collect-a-Can celebrated its 12th birthday in April 2005.

Thanks to its efforts, the recycling of cold-drink cans increased from 18% in 1993 to 66% in 2003. This is higher than the recycling rate in the USA and the European Union.

Over the past 10 years, more than 530 t of cold-drink cans and 400 000 t of scrap metal have been recycled.

According to a survey conducted by Collect-a-Can, more than 37 000 people earn a living by picking up cans for recycling. In excess of R270 million has been paid to can collectors over the past 10 years.

The glass industry in South Africa has taken a proactive stance in driving glass recycling by agree-

ing on a model of self-regulation. This will involve a section 21 company being established and managed according to guiding principles laid down in the Glass Memorandum of Understanding (MoU), signed on 19 May 2005.

The MoU evolved from extensive research, consultation and negotiation and enjoys the support of the National Glass Recycling Forum, which includes the entire waste-glass value chain, as well as consumer groups. The initiative aims to increase glass-recycling levels from 20% to 50% a year in less than five years.

The official signing of the MoU also marked the launch of a comprehensive national recycling campaign aimed at addressing the challenges posed by waste glass in the environment.

Environmental injustices

The negative effect of asbestos on the environment and other environmental-injustice issues are a priority for the Department of Environmental Affairs and Tourism.

Efforts that are being undertaken by the South African Government to deal with the asbestos problem include:

- eradicating mine-dumps
- developing occupational health and safety regulations on asbestos
- developing safety standards and establishing a single compensation office
- formulating a code of best practice for the maintenance, demolition and disposal of asbestos-containing material
- abolishing the use of asbestos in road construction
- gradually phasing out asbestos-use in housing.

In October 2005, regulations to ban the use of asbestos in South Africa were published for comment. A study on secondary asbestos pollution and its effect on affected communities was also expected to be completed during the course of the year.

There has been a decline of 39% in local asbestos consumption from more than 12 600 t in 200 to just over 7 700 t in 2003. There are fewer than 200 people employed in the domestic asbestos industry.

International co-operation

The department promotes South Africa's interests by participating in a number of international commissions, such as the International Commission for the Conservation of Atlantic Tunas, the Commission for the Conservation of Antarctic Marine Living Resources, and the International Whaling Commission.

South Africa, through the department, has adopted the Benguela Fisheries Interaction and Training (BENEFIT) Programme and the Benguela Current Large Marine Ecosystem (BCLME) Programme as integral parts of the New Partnership for Africa's Development (NEPAD) initiative.

BENEFIT is a joint initiative between South Africa, Namibia and Angola to conduct scientific investigations into commercially important living marine resources and their interaction with the environment in the Benguela region.

The BCLME Programme is another initiative by these three countries to facilitate the sustainable management and protection of the marine ecosystem. It is aimed primarily at improving the structures and capacities of these three countries to deal with problems and issues that occur across national boundaries, so that the ecosystem may be managed as a whole.

The following important instruments have been acceded to, or ratified:

- Agreement for the Implementation of the Provisions of the UN Convention on the Law of the Sea on 10 December 1982 Relating to the Conservation and Management of Straddling Fish Stocks and Highly Migratory Fish Stocks (Straddling Stocks Agreement)
- Agreement on the Conservation of Albatrosses and Petrels (ACAP)
- Convention for the Protection, Management and Development of the Marine and Coastal Environment of the East African Region and Related Protocols (Nairobi Convention)
- Convention for Co-operation in the Protection and Development of the Marine and Coastal Environment of the West and Central African

Region and Related Protocol (Abidjan Convention)

- SADC Protocol on Fisheries.

United Nations Framework Convention on Climate Change (UNFCCC)

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

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

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



In January 2005, the Minister of Environmental Affairs and Tourism, Mr Marthinus Van Schalkwyk, published norms and standards for the sustainable utilisation of large predators, as well as regulations governing the keeping and hunting of indigenous predators, in the *Government Gazette*.

Since 1997, government has continuously condemned the practice of canned hunting, and the draft norms, standards and regulations support its endeavours to stamp out this practice.

The aims of the draft norms, standards and regulations are to:

- provide a national approach to and minimum standards for all aspects relating to the management of large predators
- regulate the hunting of large predators
- promote the ethical hunting of large predators
- regulate the control of damage-causing animals
- protect the rights of owners of properties adjacent to those on which large predators are introduced
- regulate the import and export of large predators
- protect the genetic integrity of indigenous predator populations
- ensure sustainable use of large predators.

It took effect on 1 July 2005 and is enforced in terms of the provisions of the National Environmental Management: Biodiversity Act, 2004 (Act 10 of 2004).

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

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

All countries that have ratified the convention are required to:

- develop, update and publish national inventories of anthropogenic emissions by sources, and removals by sinks of GHG (the GHG excludes those listed in the Montreal Protocol)
- formulate, implement and update national and regional programmes containing measures to mitigate climate change
- promote and co-operate in the development and transfer of technology that controls, reduces or prevents anthropogenic emissions of GHG
- promote sustainable management, conservation and enhancement of sinks and reservoirs of GHG
- co-operate 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 on the economy, public health and the quality of the environment
- promote and co-operate in the timely and transparent exchange of information, including scientific, technological, socio-economic and legal information and research
- promote and co-operate in education, training and public awareness
- report to the Conference of the Parties (COP).

South Africa acceded to the Kyoto Protocol in July 2002. As a signatory party, it is required to submit an initial national communication to the UNFCCC Secretariat reporting, among other things, on national circumstances, the National GHG Inventory, vulnerability and adaptation, mitigation options and preliminary needs assessments. To prepare this document, the Department of Environmental Affairs and Tourism commissioned detailed country studies to be undertaken to evaluate a broad range of

likely climate-change impacts in South Africa. The results of these studies were compiled into the initial national communication to the UNFCCC Secretariat, which was submitted during the ninth COP of the UNFCCC that was held in Milan, Italy, in December 2003.

The Kyoto Protocol provides for economic instruments to be used while endeavouring to achieve the objectives of the convention. Three mechanisms have been created and only one, the Clean Development Mechanism (CDM), involves the participation of developing countries like South Africa. The functions of operationalising the CDM have been delegated to the Department of Minerals and Energy. This mechanism allows developed countries to conduct GHG-reducing projects in South Africa, while assisting South Africa with sustainable development.

Convention on International Trade in Endangered Species (CITES)

CITES, also known as the Washington Convention, was negotiated in 1973 when it was realised that international trade in wildlife and wildlife products could lead to the overexploitation of certain species, thereby threatening them with extinction.

CITES came into force in South Africa on 13 October 1975. South Africa, together with the other 149 member countries, acts by regulating and monitoring international trade in species which are, or may be, affected by this trade.

South Africa attended the COP 13 of CITES, which took place in October 2004, in Bangkok, Thailand. The COP's role is to assess the implementation of the convention and to make recommendations to improve its effectiveness, as well as amend the appendices. The parties meet every two and a half years.

Leading up to the COP, parties submit proposals for interpretative resolutions and amendments to the appendices of the convention. Species may be added to the appendices, transferred between appendices, or removed from the appendices. At the COP, procedures for control of the trade in species of fauna and flora listed in the appendices are examined and adapted where necessary.

In 2004, South Africa submitted proposals on the black rhino and leopard.

Montreal Protocol

South Africa, as a signatory to the Montreal Protocol, has a national obligation to safeguard the ozone layer from depletion.

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

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

- working groups were constituted to assist government to implement the protocol
- regulated ODSs can only be imported or exported after applying for an import/export permit through the Department of Trade and Industry under the Import and Export Control Act, 1963 (Act 45 of 1963)
- ODSs can only be imported after an environmental levy of R5 per kg of CFC has been paid
- information is disseminated to interested and affected parties
- Africa network meetings, as arranged by UNEP, are attended, where views, experiences and problems are shared to improve co-operation within the region and as per NEPAD requirements.

Obligations include:

- ensuring that South Africa, as a party to the protocol, protects human health and the environment against harm from human activities, which modify or are likely to modify the ozone layer
- ensuring the protection of the ozone layer by taking precautionary measures to equitably control total global emissions of substances that deplete the ozone layer, with the ultimate objective of totally eliminating them

- reporting and sending to the Ozone Secretariat data on production, imports, exports and consumption of regulated ODSs as collected from dealers and relevant departments.

The Department of Environmental Affairs and Tourism has embarked on a national project to establish methyl bromide consumption trends and a database of suitable, feasible and economically viable alternatives to methyl bromide. This document will form the basis for an intensive research/evaluation project to phase out, in the short term, 20% of methyl bromide usage, mainly in the agricultural sector.

As of 1 January 2005, all developing countries were to reduce their respective methyl bromide consumption by 20%, as per the phase-out timetable.

International Agreement on the Conservation of Albatrosses and Petrels

The ACAP, which South Africa ratified in November 2003, came into force on 1 February 2004. South Africa became the fourth country to ratify the agreement, following Australia, Ecuador and New Zealand.

The ACAP aims to reduce the threat of extinction of the 28 species of albatrosses and larger petrels covered by the agreement. All these species are killed as by-catch in longline fishing operations. The birds attempt to snatch baited hooks as they are being deployed, and are then dragged beneath the sea surface and drowned. Simple effective by-catch mitigation measures, such as bird-scaring streamers and line-setting at night, need to be widely adopted if these birds are to be saved from extinction.

The agreement, which includes an action plan, describes a number of conservation measures to be implemented by signatory states to improve the conservation status of the increasingly threatened albatrosses and larger petrels.

Apart from reducing seabird by-catch from longline fishing, these include research and monitoring, the eradication of introduced species such as rats and feral cats at breeding sites, the reduction of disturbance and habitat loss, and the reduction of marine pollution.

South Africa is particularly important in the conservation of albatrosses and petrels, since it is a range state to 15 of the 28 species covered under the ACAP. South Africa's sub-Antarctic Prince Edward islands are important breeding sites for nine of these species, most of which have a formal threatened conservation status.

The Prince Edward islands are particularly important to the wandering albatross, hosting more than 40% of the world's population of this species. The wandering albatross is the largest of all albatrosses, with a wingspan of up to 3,5 m. It is expected that South Africa joining the ACAP will boost conservation-related research on the islands, allowing for the best management of these important populations of threatened species.

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, and 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
- Green Trust
- Keep South Africa Beautiful
- National Conservancy Association of South Africa
- Peace Parks Foundation
- South African National Foundation for the Conservation of Coastal Birds
- Trees and Food for Africa
- Wildlife and Environment Society of South Africa
- Worldwide Fund for Nature South Africa.

Acknowledgements

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South African National Biodiversity Institute

South African National Parks

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