SOUTH AFRICA

Yearbook

2021/22

Forestry, Fisheries and the Environment

Forestry, Fisheries and the Environment

In April 2021, the Department of Environment, Forestry and Fisheries changed its name to the Department of Forestry, Fisheries and the Environment (DFFE). The DFFE is mandated to give effect to the right of citizens to an environment that is not harmful to their health or well-being, and to have the environment protected for the benefit of present and future generations. To this end, the department provides leadership towards sustainability in environmental management, conservation and protection for the benefit of South Africans and the global community.

The National Development Plan (NDP) sets out a vision for promoting environmental sustainability in South Africa by making an equitable transition to a low-carbon economy and transforming human settlements for improved local governance and spatial integration. Broadly, the NDP envisions environmental sustainability and transformation within the context of an integrated and inclusive economy that is supported by a capable and developmental state. This vision is given expression by Priority 1 (Economic transformation and job creation), Priority 4 (Spatial integration, human settlements and local government) and Priority 6 (A capable, ethical and developmental state) of government's 2019 – 2024 Medium Term Strategic Framework, with which the work of the DFFE is closely aligned.

Accordingly, the department's ongoing objective is to develop strategies and policies aimed at regulating and promoting the sustainable use of inland and coastal natural resources; and reducing carbon emissions, atmospheric pollutants and the effect of climate change. As part of the national macro organisation of government, the forestry and fisheries functions of the former Department of Agriculture, Forestry and Fisheries were shifted to the DFFE.

Government is prioritising the need to protect natural resources while growing a post-COVID-19 economy. Key to the recovery is the Green Stimulus Recovery Programme, which forms part of the post-COVID-19 Economic Reconstruction and Recovery Programme for South Africa. It will contribute to equitable economic growth, provide employment to marginalised communities and grow economic sectors reliant on the environment without destroying it.

Over the medium term, the department will continue to focus on supporting an equitable transition to a low-carbon economy and a climate-resilient society; creating an enabling environment for South Africa's transition to a circular economy and creating work opportunities and jobs through public employment programmes.

Supporting an equitable transition to a low-carbon economy and a climate-resilient society

The DFFE will prioritise the implementation of the approved low-emissions development and growth strategy over the medium term, and seek to build capacity for the Presidential Climate Change Coordination Commission secretariat. It will also spearhead the development of job resilience plans in the five sectors identified as the most vulnerable to climate change (coal, agriculture, tourism, petrol-based transport and metals).

These initiatives feed into the National Climate Change Bill, which, once promulgated, will serve as the overarching legislative framework for the implementation of climate adaptation and mitigation within provinces and municipalities, and ensure the coordination of climate change interventions across the three spheres of government. These activities will be carried out in the Climate Change, Air Quality and Sustainable Development programme, which has a budget of R1.4 billion over the MTEF period. Spending in the programme is set to decrease at an average annual rate of 6.7%, from R612.8 million in 2021/22 to R497.7 million in 2024/25, mainly due to the repurposing of funding to augment the operational budget of public entities.

Improved waste management towards a circular economy

Over the medium term, the DFFE will focus on creating an enabling environment to support the transition to a circular economy, which entails transitioning from the current wasteful economy to a more regenerative, inclusive and equitable one. Accordingly, the department will continue with the implementation of the Recycling Enterprise Support Programme and Operation Phakisa initiatives that contribute to job creation in the waste management sector. In addition, it will implement the national waste management strategy, which is aimed at minimising waste and diverting 40% of waste from landfills over the next five years.

In an effort to reduce plastic waste and encourage plastic recycling, over the period ahead, the levy on plastic bags is expected to be extended to all single-use plastics used for retail consumption – including plastic straws, utensils and packaging – to curb their use, encourage reuse and recycling, and divert waste from landfill. In partnership with the Council for Scientific and Industrial Research and the Department of Trade, Industry and Competition, the department will work towards implementing a waste management plan for the tyre industry.

The plan includes establishing sustainable markets for recycled tyre products and developing processing capacity to support the recycling of old tyres in environmentally sustainable ways.

Expenditure for these activities is within an allocation of R1.9 billion over the medium term in the Chemicals and Waste Management programme.

Creating jobs and work opportunities through the Expanded Public Works Programme

The departments commitment to job creation is reflected in its medium-term targets of providing 103 659 full-time equivalent jobs and 210 780 work opportunities through the expanded public works programme. These jobs and work opportunities will be made available through projects and initiatives that focus on: restoring and rehabilitating degraded ecosystems (environmental protection and infrastructure programme); expanding the conservation estate (Working for Ecosystems); protecting, restoring and rehabilitating wetlands (Working for Wetlands); protecting water resources (Working for Water); managing sustainable land use (Working for Ecosystems); sustaining production, growth and transformation in the forestry sector (Working for Forests); and addressing the challenges faced by the fisheries sector (Working for Fisheries). The Environmental Programmes section is allocated 41.9% (R11.6 billion) of the department's total budget to fund these initiatives over the MTEF period.

Legislation and policies

The DFFE's mandate is derived from the following legislation:

- National Environmental Management Act (NEMA), 1998 (Act 108 of 1998), which provides for specific legislation on biodiversity and heritage resources, oceans and coasts, climate change and air quality management, and waste and chemicals management;
- National Environmental Management Amendment Act, 2004 (Act 8 of 2004), which streamlines the process of regulating and administering the Environmental Impact Assessment process;
- National Environmental Management: Air Quality Act, 2004 (Act 39 of 2004), which reforms the law regulating air quality in order to protect the environment by providing reasonable measures for preventing pollution and ecological degradation, and securing ecologically sustainable development; and provides for national norms and standards that regulate the monitoring of air quality;
- National Environmental Management: Biodiversity Act (NEMBA), 2004 (Act 10 of 2004), which significantly reforms South Africa's laws regulating biodiversity;
- National Environmental Management: Integrated Coastal Management Act, 2008 (Act 24 of 2008), which promotes the conservation of the coastal environment, and ensures sustainable development practices and the use of natural resources;
- the National Environmental Management: Waste Act, 2008 (Act 59 of 2008), which reforms the law regulating waste management in order to protect health and the environment by providing reasonable measures for the prevention of pollution;
- the National Environmental Management: Protected Areas Amendment Act, 2009 (Act 15 of 2009), which provides for the assignment of national parks, special parks and heritage sites to South Africa in terms of the World Heritage Convention Act, 1999 (Act 49 of 1999);
- National Forests Act, 1998 (Act 84 of 1998), which promotes sustainable management and development of forests for the benefits of all; creates the conditions necessary to restructure forestry in state forests; provides special measures for the protection of certain forests and trees; promotes the sustainable use of forests for environmental, economic, educational, recreational, cultural, health and spiritual purposes; promotes community forestry; promotes greater participation in all aspects of forestry and forest products industry by person disadvantaged by unfair discrimination;
- National Veld and Forest Fire Act, 1998 (Act 101 of 1998), which provides for the prevention and combating of veld, forest and mountain fires across South Africa; and
- Marine Living Resources Act, 1998 (Act 8 of 1998), which deals with the long-term sustainable utilisation of marine living resources.

Budget and funding

The DFFE was allocated R9.1 billion for the 2021/22 financial year. The department receives allocations amounting to R27.2 billion over the medium term, increasing at an average annual rate of 0.9%, from R9.1 billion in 2021/22 to R9.3 billion in 2024/25. Spending on goods and services accounts for an estimated 53% (R14.5 billion) of the department's total allocation over the MTEF period, with spending on compensation of employees comprising an estimated 21.4% (R5.8 billion).

Forestry

The DFFE is the custodian of South Africa's forest resources, which cover over 38 million hectares (ha) – about 31.1% of the country's land surface area. Forest products contribute about R36.34 billion to the economy. Export value decreased by 5%, from R26 to R24.7 billion.

This is underpinned by 1.2 million ha of well-developed plantation forestry. The forestry sector is responsible for 147 400 direct jobs. A forest sector review conducted in preparation for the Forestry Sector Master Plan revealed that forestry products contribute at least 4.5% to the total manufacturing in the country, putting it among the top five sectors within the manufacturing industry. It also revealed that export earnings had increased almost threefold, providing a positive trade balance of up to R10 billion in less than a decade.

Much of forestry operations are rurally based, making it a significant contributor to rural economies and social wellbeing. Forestry provides livelihood support to 648 000 people in the country's rural areas. The pulp and paper industry provides about 16 000 direct and 10 000 indirect employment opportunities. Some 18 100 direct workers are employed and 6 000 indirect in sawmilling, and 3 600 in the timber-board and 2 000 in the mining timber industries, while a further 7 500 workers are employed in miscellaneous jobs in forestry.

The forest sector (forestry and forest products) contributes about 0.6% to the Gross Domestic Product (GDP), a considerable decline from the usual average of 1.2% to the GDP in the previous years. Forestry products contribute at least 4.5% to total manufacturing making it among the top five sectors within manufacturing. In terms of regional GDP, forestry in KwaZulu-Natal contributes 2.7%; Mpumalanga 3.0%; the Eastern Cape 0.7%; Limpopo 0.5% and the Western Cape about 0.2%.

Mpumalanga has the highest investment in plantations at R21.06 billion (42.2%) followed by KwaZulu-Natal with R18.18 billion (36.4%), the Eastern Cape at R6.8 billion (13.6%), Limpopo R2.3 billion (4.6%) and the Western Cape at R1.6 billion (3.5%).

Forestry is one of the sectors that have huge potential in job creation whilst ensuring the sustainable use of natural resources. Through the Plantation Forestry and the Forestry Stewardship Council, the DFFE will be able to enhance on the existing natural forests and woodlands. Of the 1.2 million ha of plantations, some are leased by government to private companies, and 3.7% of these are owned by small growers.

There are three categories of forests in South Africa, namely indigenous forests, woodlands and plantation forests. Natural forests cover approximately half a million ha of land in total, plantation forestry covers about 1.2 million ha and the woodlands collectively cover between 36 and 38 million ha, depending on the classification used.

Forestry activities in indigenous forests and woodlands are not limited to the protection of the resource as a natural heritage, but include its development, use and management, as well as the management and processing of non-timber forest products. Plantation forestry practices include, among other things, the establishment of vast areas of land with exotic tree species that are harvested and processed into pulp for the paper and packaging industries; sawn timber for the production of structural and industrial timber used in the construction industry; poles for telephone and electricity supply; mining timber for use as underground support structures in primarily the gold and platinum mining sectors. The balance of other timber produced is used for a variety of other products, such as charcoal and match manufacture.

Although large forestry companies do not own all the certified forests, having their own specialist environmental departments has helped the rapid expansion of certification, as they ensure that land is managed according to their own stringent environmental codes of practice. To promote transparency, members of the public are invited to join company staff when regular audits are conducted.

There has been an increase in the number of non-corporate growers who have become certified. This may be attributed to factors such as the Forest Stewardship Council's (FSC) acceptance of group-certification schemes and the availability of local FSC auditors, both of which have reduced the cost of certification considerably. The introduction of small, low-intensity managed forest audits enables small and community forestry schemes to be FSC-certified.

The DFFE is working towards a transformed forestry sector in which resources are sustainably managed. This will include the publication of the State of Forests Report in the 2021/22 financial year, as well as the introduction of skills development, legislative and policy development and tree planting programmes. Additional steps are also being taken to ensure that forests are protected against threats such as fires, timber theft, pests and diseases.

Indigenous forests

Only about 0.5% of South Africa's total land area is covered by natural forests. About half of the more than 1 700 indigenous tree and shrub species, representing some 530 000 ha of dense growth, grow along the south and east coasts and on the southern and south-eastern slopes of inland mountains. The other half is spread over the interior plateaux in isolated valleys and ravines.

A number of these natural forest regions, such as the Tsitsikamma National Park, are important tourist attractions. The large Afro-temperate forests of the southern Cape, although distributed close to the coast, are aligned with the inland forest types of the Eastern Cape, KwaZulu-Natal, Mpumalanga and Limpopo. This is because the southerly temperate latitudes compensate for the altitude of inland forests.

Almost half of all natural forests in South Africa are found on private property or land under communal tenure. A detailed inventory of natural forests helps government to monitor changes in forest areas.

Although the country's low natural forest coverage has led to the development of the commercial forestry sector over the past century, natural forests have continued playing a major role in the livelihoods and well-being of many rural communities. The use of natural forests as sources of building material, fuel wood, food and medicine is increasing, with an estimated 80% of South Africa's population still using medicinal plants, most of which are sourced from natural forests.

The forest-type classification for natural forests represents 24 broad forest types. The Natural Forests Protected Areas System guides the setting aside and demarcation of natural forests as protected areas. Systematic timber harvesting occurs in certain areas of southern Cape forests and on a smaller scale, in the Amathole forests in the Eastern Cape.

This sustainable harvesting system concentrates on the removal of small quantities of senile trees dying off within the forest. On average, 3 750 cubic metres (m^3) of round logs are harvested annually (150 m^3 of stinkwood, 750 m^3 of yellowwood, 2 500 m^3 of Australian blackwood and 350 m3 of other species).

The seven-week fern (Rumohra adiantiformis), harvested in the Knysna and Tsitsikamma forests, is another valuable product of indigenous forests. The South African market for this fern is considerable and reaches its peak in September, when sales have been known to exceed 420 000 bunches.

Woodlands

The woodlands, also known as savannahs, constitute a forest resource of major importance in South Africa. It is the most accessible forest resource for poor communities and contributes in the region of R2 000 to R5 000 to poor households annually. Natural forests cover less than one million ha of land in total, plantation forestry covers less than 1.3 million ha and the woodlands collectively cover between 29 million and 46 million ha.

The cover includes extensive areas in the low-lying, drier areas of Limpopo, KwaZulu-Natal and Mpumalanga. Rich biodiversity is found in savannah woodland comprising 5 900 plants, 540 bird species and 175 mammals.

These include iconic species such as the Big Five group of mammals that are important to the tourism industry. Several protected tree species of the savannah, such as camel thorn and leadwood, contribute substantially to the lucrative braai wood market, and guidelines have been set for licensing processes to assist with the control of their use.

Kathu Forest in the Northern Cape is the first woodland area to be declared protected woodland under the National Forests Act of 1998.

In the past, this resource was not really recognised as a forestry responsibility, except where woodland occurred on state-forest land in conservation areas. However, the National Forestry Action Programme of 1997 identified woodland management as a key area of operation for forestry.

The National Forests Act of 1998 also includes woodland in its definition of forests and mandates monitoring and reporting on the state of the woodlands. This legislation protects woodlands on private and communal land, as well as in state forests, while promoting sustainable use.

Savannah woodlands are the most extensive vegetation type in southern Africa and dominate Africa as a whole. Globally, woodlands cover between an eighth and a sixth of the Earth's land surface.

The woodlands are a valuable source of fuel, building material, craft timber and a variety of non-timber products. These include fruit, fodder, medicinal compounds, honey, meat and mushrooms. They form the backbone of the livelihoods of millions of people. The annual marula fruit (Sclerocarya birrea) harvest, for example, is worth some R1.1 billion a year to rural communities.

There are 87 savannah woodland types, and although the biome as a whole is fairly well protected in formal and private reserves, many underprotected savannah types have been identified.

Another woodland type is the Albany Thicket Biome, characterised by dense growth of woody and succulent plant species. There are 13 thicket types, which together cover about three million ha.

Commercial forests

Commercial forest plantations predominantly meet South Africa's demand for wood. During the 1930s, the country started extensive commercial plantations to make South Africa self-sufficient in its timber requirements, and to provide more job opportunities.

Commercial plantations of exotic species proved to be a sound investment and the private sector established large plantations of pine, eucalyptus and wattle. South Africa's plantation forests cover about 1% of the combined cultivated (arable) and grazing land.

The commercial forestry industry in South Africa is committed to practising sustainable forest management and is a world leader in forest certification. Stringent environmental codes of practice are implemented in all plantation and processing activities.

The Institute for Commercial Forestry Research completed its role in developing the National Forest Protection Strategy for the department, a project funded by the Food and Agriculture Organisation.

Another development which will assist in enhancing forest protection is the memorandum of understanding, formalising Forestry South Africa's support and funding for these activities at the Forestry and Agriculture Biotechnical Institute, which has been entered into with the University of Pretoria.

South Africa's intensively managed commercial forestry plantations are recognised as some of the most productive in the world. Consequently, from a limited geographic footprint of 1.2 million ha, the industry can produce, on a sustainable and annual basis, between 15 and 18 million tons (t) of timber a year.

Community forestry

Community forestry is designed and applied to meet local social, household and environmental needs and to benefit local economic development.

Community forestry is implemented by communities or with the participation of communities and includes tree-centred projects in urban and rural areas, woodlots and woodland being managed by communities and individuals.

Community forestry has gained impetus through more focused core functions, particularly in urban greening and forest enterprise development.

Participatory forest management of the DFFE is an integrated approach that contributes to achieving the sustainable management of South African forests.

Elements of participatory forest management were initially developed for indigenous state forests.

However, the aim is to use participatory forest management as an approach to managing all forest types, where feasible (indigenous forests, plantations, woodlots and woodlands) and where different types of ownership and management (state, provincial, communal, private and community) exist.

Participative forestry

The DFFE supports the establishment of community projects through regional forestry staff. An estimated R2 million has already been spent from the Community Facilitation Fund to support the establishment of projects on the ground. Projects include the establishment of medicinal plant nurseries, in partnership with various stakeholders, and beekeeping, in partnership with the Agriculture Research Council.

In addition to producing honey, beekeepers play a critical role in agriculture, contributing to crop pollination and the development of products worth billions of rand.

The honey industry in South Africa has an average annual turnover of R3.2 billion and produces some 2 000 t a year. Government's investment in KwaZulu-Natal aims to increase national production to 100 000 t and employ over 100 000 people.

Forestry Master Plan

The Forestry Sector Master Plan is in support of the Reimagined Industrial Strategy for South Africa. Forestry is also one of the sectors that is being prioritised under the Public Private Growth Initiative – a partnership between government and the private sector to stimulate investment.

The primary objective of the master plan process is to develop an agreed-upon set of actions, with time frames, that all stakeholders commit to implementing for the benefit of the sector or value-chain. Its objectives include encouraging sector growth, investment, job creation and competitiveness. It was developed using available research and extensive consultations with industry, specialist entities and relevant government departments and agencies.

The master plan could result in as much as 50% black and community ownership of land available for plantations if the ongoing land reform programme was expedited and effectively implemented.

National Arbor Month

South Africa celebrates Arbor Month in September every year. Arbor Week is commemorated in the first week of September annually.

Historically, South Africa did not have a culture of tree planting, and it was in the 1970s that a real need to promote tree planting was recognised. The concept of National Arbor Day ensued from the 1973 Green Heritage Campaign.

To date, the campaign has graduated to Arbor Month, which is a national campaign initiated to celebrate South Africa's trees and to raise awareness about their importance. The theme for Arbor Month 2021 was; "Forest Restoration: a path to recovery and well-being". The event was used as an opportunity to encourage citizens to protect indigenous forests, help prevent veld and forest fires, plant a tree to green the country and mitigate against climate change, plant indigenous trees that save water, use water conserving methods when planting trees and integrate fruit trees into their food gardens.

National Arbor Month serves to promote awareness for the need to plant and maintain indigenous trees throughout South Africa, especially for the many disadvantaged communities who often live in barren and water stressed areas. It further intends to:

- raise awareness of South Africa's urban and rural greening initiatives;
- promote better understanding of trees, particularly indigenous trees and fruit trees;
- highlight the important role trees play in sustainable development and the livelihoods of people and their environment; and
- encourage communities to participate in various greening activities within their own surroundings.

To promote greening, especially the planting of indigenous trees that are becoming scarce, the concept of trees of the year was born some years ago. Arbor Month 2021 promoted the planting of three indigenous species that were identified and named as trees of the year – common tree, tree for promotion and tree for appreciation. The common tree for 2021 was Vachellia karoo (Sweet Thorn); the tree for promotion was Portulacaria afra (Pork Bush) and the tree for appreciation was Warburgia salutaris (Pepperbark Tree).

National Arbor City Awards

The National Arbor City Awards are greening competitions that take place in line with the National Greening Strategy. The purpose of the competition is to encourage municipalities to green their areas of jurisdiction and promote environmental conservation and development, thereby securing a healthy living environment for residents in all settlement areas. It provides incentives and rewards to municipalities that are doing their best in terms of greening and landscape management, especially in townships and new settlement areas.

The competition further encourages the municipalities to create awareness around the importance of green landscapes and provide a platform for the diagnosis of challenges facing municipalities in the area of greening.

There are three categories – metropolitan municipalities, local municipalities and rural-based municipalities. For each category the winner receives prize money to promote greening in their area.

Champion Tree Project

The purpose of the Champion Tree Project is to identify and protect trees that are of national importance and worthy of special protection, due to their remarkable size, age, aesthetic, cultural, historic or tourism value.

Since the start of the project in 2003, 86 trees or groups of trees have been declared as champion trees, based on criteria such as size, age and historical value. These trees are all protected under the National Forests Act of 1998. They include the Tsitsikamma Big Tree along the Garden Route, the Post Office Milkwood Tree of Mossel Bay, the Sagole Baobab in Limpopo and camphor trees planted at Vergelegen Estate in the Western Cape three centuries ago.

The Sagole Baobab has the second-biggest trunk in the world, while a stand of saligna gum trees planted in 1906 near Tzaneen in Limpopo are the tallest trees in Africa. In May 2021, the governments of Mexico and South Africa signed a cooperation agreement aimed at sharing technical expertise on the management of the two thickest trees in the world the Tule Tree of Mexico and the Sagole baobab. This is the first twinning of trees agreement in the world.

A few champion trees have died since the launch of the project, including the Platland Baobab in Limpopo, which collapsed in 2017. In Cape Town, the Tokai Arboretum was damaged by fire, and extensive work had to be undertaken by arborists to fell trees and prune or treat others.

The oldest planted tree in South Africa is a saffron pear, brought from the Netherlands and planted in the Dutch East India Company's gardens in Cape Town more than three centuries ago, supposedly by Jan van Riebeeck. Historic trees include a poplar tree, which served as a landmark for refugees, during the apartheid regime, who found a safe haven in the Johannesburg house of Ruth Fischer, the daughter of Bram Fischer, who was a founding member of the South African Communist Party.

In 2015, a new record-breaking tree was discovered in an old tree lane in the Boschendal Wine Estate. This Karri Gum Tree of 50.4 metres (m) tall has a massive crown and a trunk circumference of over 8 m and is now officially the largest tree in South Africa.

A group of international and local tree climbers has visited and climbed the champion trees around the country, contributing to more accurate height measurements, and installing nesting boxes for the rare Cape Parrot in some of the large champion trees that occur in natural forests.

All the trees have also been visited by a professional photographer, to create a proper photographic record.

Million Trees Programme

The Million Trees Programme was launched in 2007 as part of a United Nations (UN) greening initiative to encourage countries worldwide to plant more trees. Its purpose is to ensure that at least one million trees, including fruit trees and indigenous ornamental shade trees, are planted every year in various member states of the UN.

In South Africa, the Million Trees Programme is a partnership between the three spheres of government, non-governmental and community-based organisations, schools and the corporate sector.

It is part of the South African contribution to the UN Environment Programme's Plant for the Planet: Billion Tree Campaign, where communities, industry, civil society organisations and governments are encouraged to plant at least one billion trees worldwide.

Socio-economic reform and growth

The forestry vision states that forests are managed for people and that there is a need to create an enabling environment for economic and social development through sustainable forestry, especially at local level.

Strategies to achieve this vision include forestry enterprise development, aimed at creating opportunities for people to use forests, including indigenous forests, woodlands and plantations, and forest-based resources for economic growth, income-generation and job creation.

The forestry enterprise development concept is central to government's pro-poor agenda and also a key component of broad-based black economic empowerment in the forestry sector.

World Soil Day

World Soil Day is observed and celebrated every year on 5 December by all UN member states, organisations of the UN system and other international and regional organisations, civil society, non-governmental organisations (NGOs) and individuals to emphasise the importance of soil.

The 2021 theme for World Soil Day was; "Halt soil salinization, boost soil productivity". The theme aimed to raise awareness of the importance of maintaining healthy ecosystems and human well-being by addressing the growing challenges in soil management, fighting soil salinization, increasing soil awareness and encouraging societies to improve soil health.

Role players

National Forest Advisory Council (NFAC)

The function of the NFAC is to advise the Minister of Forestry, Fisheries and the Environment on matters related to forestry in South Africa. The Council has two permanent committees – the Committee for Sustainable Forests Management (CSFM) and the Committee on Forest Access (CFA). The CSFM's role includes advising:

- the NFAC, the DFFE and the Minister of Forestry, Fisheries and the Environment on all aspects of sustainable forest management in the country;
- the DFFE and the Minister of Forestry, Fisheries and the Environment on the administration of criteria, indicators and standards for sustainable forest management; and
- the DFFE on convening forum for interested persons to participate in the formulation of criteria, indicators and standards.
- The CFA advises the Minister of Forestry, Fisheries and the Environment on promoting the granting and exercise of access to forests; promoting education on the sustainable management and use of forests, and the use of the National Forest Recreation and Access Trust funds.

South African Forestry Company Limited (SAFCOL)

The SAFCOL conducts timber harvesting, processing and related activities, both domestically and internationally.

It employs about 5 000 people through direct and indirect employment and, by extension, is responsible for about 20 000 lives in communities adjacent to its operations.

It subscribes to the Forest Sector Charter and plays a leading role in transformation within the industry. With the focus on communities adjacent to its plantations and specifically the youth in those communities, it makes a difference in the physical circumstances and networking in communities.

The structured approach of community partnerships was strengthened, with the focus on implementing needs-driven development and making a positive impact in community members' lives.

Of special note was the launch of the SAFCOL-sponsored Forestry Chair at the University of Pretoria, which creates an opportunity for students who wish to further their studies in forestry-related fields.

Forestry South Africa (FSA)

The organisation was formed in 2002 through the amalgamation of the erstwhile Forestry Owners Association and the South African Timber Growers Association. It represents the interests of its members and the promotion and well-being of the South African commercial forestry industry. Although voluntary in its nature, FSA's membership includes all 11 corporate timber companies and their subsidiaries, operating in South Africa, 1 100 commercial timber farmers and over 20 000 small-scale black timber growers. This membership represents over 90% of the industry as a whole and virtually all the private sector involved in the industry. Due to this representivity, FSA is viewed by both government and the private sector as the body which represents the South African forestry industry.

FSA is involved in a host of areas such as research, education and training, water and environmental affairs, forest protection, bio-energy, business development and transport.

Food and Trees for Africa (FTFA)

The FTFA is the sub-Saharan African partner of Global Relief, an international greening organisation. The FTFA's mission is to contribute to healthier living, especially in disadvantaged communities, through environmental awareness and greening programmes. It also addresses sustainable development through greening, climate change action, sustainable natural resource management and food security programmes.

The FTFA works in partnership with government, the private and public sectors and civil society. Its goal is to provide trees to as many underserved communities as possible, with the help of sponsors

and certificate programmes. It manages the Urban Greening Fund in conjunction with the departments of Water and Sanitation, Forestry, Fisheries and the Environment; and the Institute of Environment and Recreation Management.

The fund supports partnerships aimed at sustainable development through tree planting, parks, food gardening projects and environmental education. Organisations, companies and individuals can contribute to the fund to help disadvantaged South Africans create a greener, healthier and more secure life.

Research and training

South Africa has world-class forestry research infrastructure and personnel, with almost 2% of the forestry industry's turnover (private and public sectors) devoted to research. The forest research function within the DFFE has been coordinating a number of research projects focusing on sustainable management of forest resources.

These include the monitoring and evaluation of bark-harvesting techniques used for two indigenous tree species in Letaba, forest sustainable harvesting of plants used for medicinal purposes, the sustainable use of monkey rope (Secamonealpini) by local subsistence farmers ex situ and in situ, conservation of the critically endangered Protea roupelliae sbsp. Hamiltonii, and conservation of the co-occurring endangered Leucospermum gerrardii within the Dr amilton Nature Reserve.

Major institutes servicing the research needs of the industry are the Institute of Commercial Forestry Research in Pietermaritzburg, the Forestry and Agriculture Biotechnology Institute and the CSIR in Pretoria. The SANBI also plays an important role, in terms of species protection.

The faculties of agricultural and forestry sciences at the universities of Stellenbosch, KwaZulu-Natal and Venda offer forestry degrees. The Nelson Mandela Metropolitan University (George Saasveld Campus) offers diplomas and limited degree courses in forestry disciplines.

The Durban University of Technology offers a diploma in Pulp and Paper Technology, and the Fort Cox College of Agriculture and Forestry offers a diploma in Social Forestry. Skills training is provided by a number of industry-sponsored and in-house training centres.

The Fibre Processing and Manufacturing (FPM) Sector Education and Training Authority (SETA), is responsible for ensuring that the training undertaken by the industry meets certain quality standards. The DFFE, together with the FPM SETA, offers study bursaries in forestry-related fields.

Fisheries

The South African fishing sector remains a significant contributor to food security and the economy. Stabilising the sub-sector through the allocation of longer-term fishing rights is critical to attracting investment into the industry. The fisheries sector is worth around R8 billion a year and the commercial sector directly employs approximately 28 000 people with many thousands more depending on fisheries resources to meet basic needs in the small-scale and recreational sectors.

The South African coastline covers more than 3 000 km, linking the east and west coasts of Africa. These shores are particularly rich in biodiversity, with some 10 000 species of marine plants and animals recorded. South Africa is among the global fishing nations that have identified the challenges within their fishing industry. With 22 commercial fisheries sectors and new fisheries being explored and experimented with, South Africa has two fisheries sector components:

- Wild capture fisheries include three distinct components, namely commercial, recreational and subsistence fisheries, each of which requires specific research and management interventions.
- The aquaculture (fish farming) sector is considered underdeveloped and as a result, has been prioritised, owing to declining wild stocks.

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 main challenge in fisheries is to create a balance between maximising the social and economic potential of the fisheries industry, protecting the integrity and quality of the country's marine and coastal ecosystems, and addressing transformation in the sector.

In line with international trends, the DFFE recognises fisheries as an economic activity rather than a purely environmental or biodiversity matter. Government has expanded the mandate for fisheries management by adding fresh water and inland fisheries, as well as aquaculture, to the department's existing responsibilities.

The fisheries sector contributes roughly 0.1% to the GDP. It is more important for economic development in the Western Cape where 11 of the 13 proclaimed fishing harbours are situated. These contribute more than 5% to provincial GDP.

The total output is estimated at 600 000 t worth about R6 billion, depending on the pelagic catch of pilchards and anchovy, which could be as much as 600 000 t.

It is estimated that direct employment in the industry constitutes approximately 27 000 jobs (16 000 in the primary sector and 11 000 in the secondary and tertiary sectors), while an additional 81 000 people are indirectly (net building and bait preparing, among others) employed in industries that are at least partially dependent on the fishing sector (figures based on industry estimates and the total allowable catch and total allowable effort, calculated as a function of tonnage).

Fisheries output is determined by catch volumes, which in turn depends on the health and management of fish stocks, varying according to ecological changes and subjected to overexploitation through illegal, unreported and unregulated fishing activities.

The DFFE seeks to prevent overexploitation by means of assigning total allowable catch and total allowable effort per species, which are adjusted regularly depending on the estimated state of the resource. The department has also sought to promote transformation in the sector through inclusion of small-scale fishing communities. The Marine Living Resources Amendment Act, 2014 (Act 5 of 2014), grants small-scale fishing communities better access to fishing rights and resources.

The small-scale fishing sector is designed to address food security needs within the local community and allow fishers to derive maximum benefit through value-adding of products and accessing markets.

The effective management of the existing harbours and proclamation of additional new harbours support resource management.

Although wild catch fisheries appear unlikely to expand beyond their present levels, aquaculture is becoming more important as a substitute for wild capture fisheries. Securing sustainable markets for aquaculture products remains of crucial importance at this time when Asian markets have been disrupted by the COVID-19 pandemic and South African producers face competition from cheap imports. Securing the safety of domestic fish stocks is a central requirement for a sustainable fishing industry. High quality scientific information to inform management decisions is the cornerstone of sound fisheries management.

Under tight resource constraints, the DFFE plans to rebuild this capacity in partnership with other branches, the industry and tertiary institutions

Under the auspices of Phakisa Initiative 5, the DFFE, together with other law enforcement authorities, focused on preventing illegal harvesting of marine resources. To ensure more permanent deployment of security personnel, the department planned to undertake a marine and coastal sectoral threat, risk and opportunity analysis to inform where the country should focus on at a strategic and operational level.

South Africa has acceded to the Indian Ocean Tuna Commission and the Commission for the Conservation of Southern Bluefin Tuna, thereby allowing the country greater influence in negotiating for increased tuna quota allocations and access.

Small-scale fisheries sector

The Small-scale Fisheries Policy seeks to address imbalances of the past and ensure that small-scale fishers are accommodated and properly managed. For the first time, fishing rights can be allocated on a group, rather than an individual. The policy further aims to support investment in community entities to take joint responsibility for sustainably managing fisheries resources and to address the depletion of critical fisheries stocks.

The sector is aimed at redressing the inequality suffered by coastal fishing communities which, as a result of unintended consequences, have remained marginalised through previous rights allocation systems. Furthermore, the establishment of the small-scale sector seeks to empower small-scale fishers to contribute meaningfully to the national GDP and to play a meaningful role in food security and job creation.

This process is informed by the Marine Living Resources Act of 1998, and the regulations thereof, which was amended to legally recognise small-scale fishers who have been living in coastal communities and depending on fishing and its related activities as a source of livelihood.

The small-scale fisheries regulations, along with the Marine Living Resources Amendment Act of 2014, provide the legal mechanism for the implementation of the small-scale fisheries policy. These reforms give legal recognition to small-scale fishers and will promote the transformation of the subsector to assist fishing communities living along the coastal areas in creating sustainable livelihoods, generating income and creating jobs.

Central to the success of small fishing cooperatives is an increase in the basket of species available to them. In 2021, the DFFE published, for public comment, an apportionment split for the squid, line fish and abalone sectors to enhance the high value species available for allocation to the small-scale sector.

Recreational fishing

While the illegal harvesting of abalone poses the greatest threat to management objectives, the DFFE will continue to work with all stakeholders in the abalone sector and continue to strengthen partnerships with other law enforcement agencies and communities to ensure that the country grows and protects its resources.

South Africa's extensive coastline, spanning two oceans, and its numerous dams, lakes, rivers and streams, make the country a recreational fisher's paradise. However, recreational fishing may only be undertaken with a valid permit and is limited to certain times of the fishing season.

To reduce user conflicts between commercial and recreational fishing and protect stocks during breeding periods, certain areas have been declared closed areas.

Recreational fishers are also subject to bag limits of fish on a per-day basis.

Annual recreational fishing licences in all industries total about 300 000, with income generated from these licences amounting to R18 million. The actual annual catch is about 17 000 t of high-value species.

World Fisheries Day

South Africa celebrates World Fisheries Day every year on 21 November – with fishing communities throughout the world.

World Fisheries Day helps in highlighting the critical importance to human lives, of water and the lives it sustains, both in and out of water.

Facts on fisheries:

- Small-scale fisheries (marine and inland) employ about 90% of those involved in fisheries.
- About 65% of the reported catch from inland fisheries is from low-income food-deficit countries.
- Estimates vary, but from around 30 million to over 60 million people in the developing world are involved in inland fisheries; it is thought that about 50% are women.
- More than 25% of the world's dietary protein is provided by fish.
- The human population consumes over 100 million t of fish annually.

Over 200 million, of Africa's one billion, people regularly consume fish and nearly half of this comes from inland fisheries.

In August 2021, Cabinet approved the National Freshwater (Inland) Wild Capture Fisheries Policy for implementation. The policy provides an efficient regulatory regime for the inland fisheries sector. It also formalises the currently informal and unrecognised activities of small-scale fisheries.
The policy, amongst others, provides for the setting up of developmental fisheries' governance institutions; support to growing inland fisheries value chains; management of sustainable inland fishing; and addresses the issues of equity and transformation of the sector.

National Environmental Impact Assessment and Management Strategy

The strategy consists of voluntary and regulated instruments where:

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

4x4 regulations

The Strategy Towards Co-regulation of the Off-road Sector in South Africa is aimed at minimising the impact of off-road driving on the environment, by giving direction to off-road users and owners to develop and use inland routes in sensitive areas responsibly. The strategy applies to the inland recreational use of off-road vehicles, including two-wheel, three-wheel and four-wheel vehicles, which include 2x4 and 4x4 motor vehicles, quad bikes and motorbikes.

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

The banning of off-road vehicles in coastal zones has enabled several shore-breeding birds, especially the Damara tern and the African black oystercatcher, to breed successfully on beaches again. The number of loggerhead and leatherback turtles hatching successfully on KwaZulu-Natal's northern beaches has also increased since the ban was enforced.

Coastal management

The ocean covers three quarters of the Earth, hence the importance of its protection. The DFFE recognises the challenges regarding the management of ocean spaces in South Africa's adjacent ocean areas.

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

The Buoy Oceans Monitoring System, which provides information on the state of the oceans at Storms River in the Tsitsikamma National Park, is the first in a series of observation and monitoring platforms, which will form the basis of the South African National Oceans and Coastal Monitoring System. The DFFE reviewed the Recreational Water Quality Guidelines for Coastal Waters intending to develop effective early warning systems to pre-empt the catastrophic impacts of possible hazards.

Environment

Nature positive future

Throughout the world, countries and formations as diverse as the European Union, India, Canada, Rwanda, Gabon, China and Japan are recognising that what the World Economic Forum terms a "nature positive future", can unlock enormous potential and investment opportunities for both developed and developing countries.

A nature positive future can enable economies to recover and grow, successfully service their national debts and carry out their governmental responsibilities to citizens. This can be done in a way that sustains both the natural environment and human health and well-being.

For South Africa, embracing a nature positive future as part of the overall economic recovery would have the following advantages – a positive impact on job creation in new industries, which offer potential for the creation of new enterprises using new technologies; dedicated international "green funds", which offer an investment source for these new industries; green bonds, which have been shown to be cheaper than traditional vanilla bonds; and investment in green and sustainable solutions, which offers the country opportunities to promote long term economic competitiveness and climate resilience.

International environment days

South Africa has adopted the entire month of June to heighten awareness of environmental issues through various pertinent activities. It is during the month of June that the country celebrates World Environment Day, World Oceans Day and World Day to Combat Desertification.

World Environment Day

World Environment Day is the biggest, most globally celebrated day for positive environmental action. Every year, participants organise clean-up campaigns, art exhibits, tree-planting drives, concerts, dance recitals, recycling drives, social media campaigns and different contests themed around caring for the planet.

World Environment Day is the UN's principal vehicle for encouraging worldwide awareness and action for the environment. Over the years, it has grown to be a broad, global platform for public outreach that is widely celebrated by stakeholders in over 100 countries. It also serves as the 'people's day' for doing something positive for the environment, galvanising individual actions into a collective power that generates an exponentially positive impact on the planet.

The day is marked annually on 5 June as per the declaration of the UN in 1972. Each World Environment Day is organised around a theme that focuses attention on a particularly pressing environmental concern. The theme for World Environment Day 2021 was; "Reimagine. Recreate. Restore". World Environment Day 2021 marked the beginning of United Nations Decade on Ecosystem Restoration.

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

World Oceans Day

World Oceans Day is aimed at appreciating, protecting, restoring and honouring ecosystem services and resources provided by oceans.

The international theme for World Oceans Day 2021 was; "The Ocean: Life and Livelihoods". The theme shed light on the wonder of the ocean and how it is a life source – supporting humanity and every other organism on Earth.

World Day to Combat Desertification and Drought

World Day to Combat Desertification and Drought is commemorated on 17 June. It aims to promote community and ecosystem resilience while improving the human condition, particularly in dry lands. According to the UN, droughts are among the greatest threats to sustainable development, especially in developing countries, but increasingly so in developed nations too.

Forecasts estimate that by 2050 droughts may affect over three-quarters of the world's population. World Day to Combat Desertification and Drought 2021 was held under the theme; "Rising up from drought together", emphasising the need of an early action to avoid disastrous consequences for humanity and the planetary ecosystems.

World Wildlife Day

World Wildlife Day is celebrated annually on 3 March. World Wildlife Day 2022 was held virtually under the theme; "Recovering key species for ecosystem restoration". The event brought together representatives of UN member States, UN System organizations and multilateral environmental agreements, civil society, and the private sector for a series of discussions along the theme.

Marine Week

Each year, the DFFE observes the National Marine Week to highlight the importance of oceans and the role they play in the life of all citizens.

It seeks to promote the appreciation of the role of the oceans, and the importance of science, technology, engineering and mathematics support for ocean and coasts management. South Africa commemorated the 2021 National Marine Week from 7 to 11 October.

National Marine Week is celebrated every year during the second week of October. Its purpose is to create awareness of the marine and coastal environment, the promotion of sustainable use and conservation of these resources, for the benefit of both present and future generations.

Projects, programmes and initiatives

Low carbon and climate resilient economy

South Africa is a board member of three significant funding bodies – the Green Climate Fund (GCF), World Bank's Climate Investment Fund and the Global Environment Facility. The memberships enable the country to shape the policies, programming and governance of these respective institutions. The country is also a member of the Partnership for Action on Green Economy.

The SANBI and the Development Bank of Southern Africa are accredited as South African Direct Access Entities of the GCF. The increasing frequency and intensity of extreme weather events around South Africa – from flash flooding in some parts of the country to devastating drought in other parts, has prompted government to sign the Paris Agreement to Combat Climate Change as an acknowledgement that the problem requires a global effort. The country continues to play an active role on the international stage through participation in a number of key multilateral environmental agreements and their associated negotiations.

South Africa's Green Economy Strategy

There is increasing global recognition that today's economic growth and development trajectory is driven by the worldwide shift towards sustainable green economies.

South Africa views green economy as a sustainable development path based on addressing the interdependence between economic growth, social protection and natural ecosystem. The South African approach is to ensure that green economy programmes are to be supported by practical and implementable action plans, emphasising the importance of building on existing best processes, programmes, initiatives and indigenous knowledge, in key sectors, towards a resource-efficient, low-carbon and pro-employment growth path and that government alone cannot manage and fund a just transition to a green economy – the private sector and civil society must play a fundamental role.

Through the DFFE's Green Economy Strategy, the department continues to work towards promoting equitable, inclusive, sustained and environmentally sound economic growth and social development to the benefit of all.

The Green Economy Strategy has eight key pillars, namely:

- green buildings and the built environment;
- sustainable transport and infrastructure;
- clean energy and energy efficiency;
- natural resource conservation and management;
- sustainable waste management;
- water management;
- sustainable consumption and production; and
- agriculture food production and forestry.

As outlined in the Integrated Resource Plan, by 2030 the DFFE aims to have sliced the country's energy demand significantly through technological innovation, good behavioural practice and public commitment to more efficient, sustainable and equitable energy use.

Green Fund

Government set up the Green Fund to support the transition to a low-carbon, resource-efficient and climate-resilient development path, delivering high impact economic, environmental and social benefits. The DFFE appointed the Development Bank of Southern Africa as the implementing agent of the Green Fund.

The Green Fund aims to provide catalytic finance to facilitate investment in green initiatives that will support poverty reduction and job creation. The Green Fund is additional and complementary to existing fiscal allocations supporting the transitioning of the South African economy to a low-carbon, resource-efficient and climate-resilient growth path.

The Green Fund responds to market weaknesses currently hampering South Africa's transition to a green economy by:

- promoting innovative and high impact green programmes and projects;
- reinforcing climate policy objectives through green interventions;
- building an evidence base for the expansion of the green economy;

and
- attracting additional resources to support South Africa's green economy development.

Sustainable development and the green economy

South Africa continues to play an instrumental role within other global coordination mechanisms.

The final adoption of the Paris Agreement to Combat Climate Change in December 2015 represented a major step forward in international cooperation towards sustainable green, low-carbon and climate-resilient economies globally. During the Paris negotiating process, South Africa played a key role as Chair of the Group of 77 plus China, representing 134 developing countries, and as lead negotiator for the Africa group.

In April 2016, South Africa joined 174 other countries in New York as a signatory to the Paris Agreement. The DFFE started domestic ratification processes that would enable the entry into force of the agreement in 2020.

This new legal framework will guide international efforts to limit greenhouse gas (GHG) emissions and enable the transition to climate resilient societies and economies, particularly through the commitment by developed countries to provide financial, technology and capacity building support to developing countries in their effort to address the climate change challenge.

In the lead-up to the Paris climate change negotiations, South Africa submitted its Intended Nationally Determined Contribution (INDC) to the United Nations Framework Convention on Climate Change (UNFCCC). South Africa's INDC is guided by the National Climate Change Response Policy and outlines national goals for the country's adaptation effort; and it clearly outlines that South Africa will peak and plateau its GHG emissions by 2030.

Good Green Deeds

The programme is led by the DFFE and aims to promote environmental actions that take into consideration sustainable living practices. At the centre of this campaign are principles of environmental justice, an understanding that becoming environmentally conscious starts with one small action, and one small action can go on to inspire global change. South African citizens have to work together to restore and maintain mother nature's majesty.

Climate Change Response Policy

The National Climate Change Response Policy is guided by the vision of the NDP of a transition to an inclusive, equitable, low-carbon and climate-resilient economy and society by 2030. By 2030, South Africa plans to have an efficient, lower-carbon public transport system that makes everyday use of private vehicles an unnecessary extravagance.

The development of the first phase of desired emission reduction objectives and carbon budgets are well underway. The Carbon Budget System is being introduced in five-year phases – an initial phase from 2016 to 2020, and the subsequent phases from 2021 onwards.

Priority focus areas are communities most vulnerable to the impacts of climate change, namely the indigent, rural dwellers and women.

Given its demonstrated capacity, the SANBI has been appointed the national implementing entity of the Global Adaptation Fund.

Pilot projects include the Greater uMngeni Catchment area in KwaZulu-Natal, the Mopani District in Limpopo and the Namaqua District in Northern Cape.

These projects, to the value of US$10 million, include the enhancement of early warning systems, protecting local communities from extreme weather events, and promoting climate smart agriculture practices.

The SAWS continues to host the Global Atmospheric Watch Station at the Cape Point, which is one of only three in Africa. This network arose from the need to understand and control the increasing influence of human activity on the global atmosphere and provide climate change information and services.

Presidential Climate Change Coordinating Commission

In December 2020, President Cyril Ramaphosa announced the appointment of members of the inaugural Presidential Climate Change Coordinating Commission (PCCCC).

The establishment of the commission emanated from the Presidential Jobs Summit held in October 2018, when social partners agreed that a statutory body be formed to coordinate and oversee the just transition towards a low-carbon, inclusive, climate change resilient economy and society.

The PCCCC is tasked with advising on South Africa's climate change response. This includes mitigation and adaptation to climate change and its associated impacts. It will furthermore provide independent monitoring and review of South Africa's progress in meeting its emissions reduction and adaptation goals.

Under the commission's terms of reference, it will advise on and facilitate a common understanding of a just transition, cognisant of the socio-economic, environmental and technological implications of climate change. This covers adaptation, mitigation as well as means of implementation.

It will also provide a platform for the engagement of key stakeholders on the National Employment Vulnerability Assessment and Sector Job Resilient Plans and ensure reporting of progress towards the implementation of these plans.

Chaired by President Ramaphosa, the PCCCC comprises representatives from government departments and state entities, business organisations, labour, academia, civil society, research institutions and traditional leadership.

People and parks

South Africa is home to more than nine million ha of protected areas network, which includes national parks, nature reserves and world heritage sites, equating to about 8% of the country's land.

These protected areas, among other things, serve as sites for conserving South Africa's ecosystems, protecting high biodiversity value and providing ecosystem services. Most of these protected areas are geographically located in rural areas, forming an integral system with rural communities whose livelihoods and cultures are closely depended on by these communities.

Wildlife Economy

South Africa is the third most biologically diverse country in the world, and therefore has one of the largest natural capital assets. This biodiversity is not only viable to the economic well-being of the country but can also be used as a vehicle for social upliftment.

The country's biodiversity comes with a number of challenges, ranging from poaching to overexploitation. The Wildlife Economy in South Africa is centred on the sustainable use of indigenous biological resources, including biodiversity-derived products for trade and bio-prospecting, the hunting industry, agriculture and agro-processing of indigenous crops, vegetables and livestock breeds, and indigenous marine resources and fisheries.

The focus of the Wildlife Economy is centred on the socio-economic benefits of eco-tourism, co-managed conservation areas and ancillary services to protected areas. Harvesting indigenous biological resources is a significant source of income for communities. In many cases, one harvester supports an entire household, but the overdependence on these have led to the depletion and, at the extreme, the extinction of some of the biodiversity.

For example, the existing commercial market for trade in South African bitter aloe, or aloe ferox is well established, as is the trade in pelargonium sidoides, buchu, rooibos, honeybush, devil's claw and crocodile fat/oil. These indigenous biological resources are predominantly used in the manufacturing of herbal medicines, cosmetics, food flavours and fragrances.

Additional products with commercial potential for industrial or pharmaceutical application are microorganisms, marine organisms, gums and resins, and venoms. Other significant drivers of the biodiversity economy include trophy hunting and the associated industry of taxidermy, sale of live game and sale of game meat. Further opportunities exist in the sale of game meat and skins for leather, bones and horns.

Another example of biodiversity-based industry is in silk production. Other biodiversity-based products include bee-keeping products (honey, wax, propollis and royal jelly), mopane worms, and ostrich eggshells and feathers.

Managing oceans and coastal conservation

The DFFE continues to support annual research voyages to Antarctica, Marion Island and Gough Island.

Servicing the contract with African Marine Solutions for the manning and operation of two research vessels, SA Agulhas II and SA Algoa, is one of the major cost drivers in the Oceans and Coasts programme,

amounting to a projected R557 million over the medium term.

Implementing the Oceans Economy Strategy forms part of Operation Phakisa, a fast results delivery programme launched by government in 2014. An estimated R311.1 million is provided over the MTEF period in the Oceans and Coasts programme for implementing the Oceans Economy Strategy, which includes activities in marine transport and manufacturing, offshore oil and gas exploration, aquaculture, marine protection services, ocean governance, small harbours, and coastal and marine tourism.

Antarctic and Southern Ocean Strategy

South Africa's Antarctic and Southern Ocean Strategy (ASOS) provides for the coordination and implementation of the Antarctic Treaties Act, 1996 (Act 60 of 1996), relating to research, conservation, sustainable resource use and environmental management in support of the African agenda.

This strategy was approved the day after the world commemorated Antarctica Day, which marked the 61st anniversary of the signing of the Antarctic Treaty. The treaty set aside almost 10% of the Earth forever to be used exclusively for peaceful purposes and in the interests of all humanity. Antarctica Day is not only a celebration of this important event, but also serves to highlight how diverse nations continue to work together peacefully using science as a common language for cooperation and stewardship of this global commons.

The ASOS outlines national interests for the continued participation in the Antarctic Treaty and sets out the vision that Antarctica and the Southern Ocean are understood, valued, and protected in the interest of South Africa, Africa and the world, which is in line with the founding principles of protecting Antarctica as set out by the original signatories to the treaty.

The strategy is the product of extensive engagement with key stakeholders, including the key government departments (and their entities) that are partners in South Africa's National Antarctic Programme – the departments of Science and Innovation, International Relations and Coordination, Public Works and Infrastructure, and Transport. The DFFE also engaged newly identified role players in the space – the Agricultural Research Council, Medical Research Council, Human Science Research Council, and others.

The strategy outlines an extensive implementation plan over the next five-year period (2021 – 2025).

Entities

iSimangaliso Wetland Park Authority

The iSimangaliso was established in 2000 in terms of the World Heritage Convention Act, 1999 (Act 49 of 1999). Its mandate is to ensure that effective and active measures are taken to protect and conserve the park; promote the empowerment of historically disadvantaged communities living adjacent to the park; promote, manage, oversee, market and facilitate optimal tourism and related development in the park; and encourage sustained investment and job creation. The authority's ongoing aim is to support and maintain biodiversity conservation, and uphold the park's status as a world heritage site.

Over the MTEF period, the authority will focus on conserving the environment in the park to mitigate the impact of deforestation and illegal developments on flora and animal habitats, especially those of critically endangered and threatened species; monitoring compliance with governing legislation; removing invasive alien plants from a targeted 90 000 ha of protected wetland area; and ensuring that at least 8 000 m³ of earthworks in wetlands is rehabilitated.

To support these activities, expenditure is expected to increase at an average annual rate of 4.6%, from R236.1 million in 2021/22 to R270.1 million in 2024/25.

The authority expects to derive 87.2% (R705.8 million) of its revenue over the period ahead through transfers from the department, increasing at an average annual rate of 3.8%, from R219.6 million in 2021/22 to R245.7 million in 2024/25; and the remainder through visitor fees.

The Marine Living Resources Fund

The fund was established in terms of the Marine Living Resources Act, 1998 (Act 18 of 1998). Its mandate and core business are to manage the development and sustainable use of South Africa's marine resources and protect the integrity and quality of the marine ecosystem. The fund also ensures fair and equitable access to South Africa's marine resources for the benefit of all citizens.

Over the medium term, the fund will focus on conducting a targeted 16 500 enforcement and compliance operations in prioritised fisheries sectors, enabling the effective protection of South Africa's marine resources, creating a targeted 1 892 jobs in coastal and rural communities, and broadening the scope of the aquaculture sector by increasing the number of locations and species farmed. To fund these activities, expenditure is expected to increase at an average annual rate of 0.4%, from R481.2 million in 2021/22 to R487 million in 2024/25.

The fund expects to receive 66.4% (R976.7 million) of its revenue over the period ahead through transfers from the department and the remainder through levies on fish and fish products; application, licence, permit and harbour fees; and fines and confiscations.

South African National Biodiversity Institute

The SANBI was established in 2004 in terms of the NEMBA of 2004. Its mandate is to monitor and report on the status of South Africa's biodiversity; all listed threatened or protected species, ecosystems and invasive species; and the impact of any genetically modified organism released into the environment.

Over the medium term, the institute will focus on providing biodiversity science and policy advice; maintaining and improving the existing national botanical gardens; and establishing 2 new national botanical gardens – in Kwelera (Eastern Cape) and Thohoyandou (Limpopo). Expenditure is expected to decrease at an average annual rate of 3.4%, from R917.2 million in 2021/22 to R827.3 million in 2024/25.

The institute expects to derive 80.7% (R1.9 billion) of its revenue over the MTEF period through transfers from the department and the remainder through entry fees charged at botanical and zoological gardens.

South African National Parks

The SANParks' mandate is to conserve, protect, control and manage national parks and other defined protected areas and their biodiversity. The entity plays a significant role in the economy, as the presence of an efficiently managed system of national parks is a key component of the national tourism economy, and acts as a catalyst for local development. Through the implementation of the EPWP, the entity has provided significant support to small, medium and micro enterprises, particularly in rural areas.

Over the medium term, the entity will focus on managing more than 4 million hectares of terrestrial and 369 657 hectares of marine protected biodiversity through a system of 21 national parks and 10 marine protected areas. While doing this, it aims to fight poaching, particularly rhino poaching in the Kruger National Park and abalone poaching in Western Cape; develop and upgrade infrastructure within national parks; and acquire 24 000 hectares of land as part of its land inclusion plan.

Other initiatives that are intended to stimulate the development of rural enterprises include Wildlife Economy programmes, which involve the donation and loaning of wildlife, and the provision of technical expertise to communities and emerging game farmers to participate in the wildlife industry value chain. The entity also forms part of the National Wildlife Crime Reaction Unit, a multi-stakeholder operation established to combat poaching crimes in South Africa. Strategies to combat wildlife crime, such as poaching, involve the technological improvement of early warning systems and risk assessments, better coordination with law enforcement agencies and the deployment of additional rangers.

The SANParks is responsible for 21 national parks in seven provinces, with a total area of just over four million ha and comprising 67% of the protected areas under state management. The national parks include:

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

• West Coast National Park.

Tourism activities within the parks include self-drive safaris, game-viewing, accommodation tariffs, adventure activities, such as guided walks and hiking, birdwatching, 4x4 trails, sightseeing, cultural and historical experiences, mountain biking, golf, canoeing and swimming.

Expenditure is expected to increase at an average annual rate of 19.3%, from R2.1 billion in 2021/22 to R3.5 billion in 2024/25, in line with an expected increase in revenue as national parks welcome more visitors following the easing of COVID-19 restrictions. The entity expects to generate 67.5% (R6.6 billion) of its revenue over the period ahead through tourism activities in national parks and the remainder through transfers from the DFFE.

South African National Parks Week

The 2021 South African National Parks Week was held from 22 to 28 November. It is an annual campaign that gives all South African citizens the opportunity to enter most of the parks, managed by the SANParks, for free, with the exclusion of Namaqua National Park and Boulders section at Table Mountain National Park.

The free access to parks does not include free access to accommodation facilities and other tourist activities. Every year, the SANParks aims to increase the number of citizens that are granted free access to national parks during this time.

South African Weather Service

The SAWS's core mandate is to provide two distinct services: the public good service, funded by government; and commercial services, where the user-pay principle applies.

Key activities include:

- maintaining, extending and improving the quality of meteorological services;
- providing risk management information;
- collecting meteorological data over South Africa and the surrounding southern oceans; and
- fulfilling government's international obligations under the conventions of the World Meteorological Organisation and the International Civil Aviation Organisation.

In an effort to combat climate change, the SAWS has adopted the approach of building a WeatherSMART nation. This is expected to enhance the early warning system to ensure that climate and weather data, products and applications are available to all South Africans. A WeatherSMART nation is Safe, More informed, Alert, Resilient and has Timeous access to relevant information and services. Over the medium term, the entity will focus on providing the following services: timeous and accurate impact-based early warnings, including climate-response initiatives for inclement weather conditions; and alerts and advisories services to safeguard lives and property against the impact of severe weather. The weather service also plans to expand and optimise its infrastructure to increase its capacity to generate new scientific insights in its field. As a result, expenditure is expected increase at an average annual rate of 7.1%, from R482.4 million in 2021/22 to R592.1 million in 2024/25.

The weather service expects to derive 66.5% (R1.1 billion) of its revenue over the medium term through transfers from the department and the remainder through commercial activities and services. These include the regulation of tariffs for aviation information supplied to the aviation industry; the rendering of non-regulated commercial activities such as the provision of lightning data; the sale of products to the water and energy sectors; and the sale of air quality-related products to various municipalities. Revenue is expected to increase in line with expenditure.

Role players

United Nations Framework Convention on Climate Change

In support of the NDP, government is working through the SANBI to spearhead an innovative programme of work on analysing ecological infrastructure and costing natural capital. This body of knowledge will empower the DFFE to make informed development-related decisions.

Its research management covers systematics and collections expansion, conservation and applied biodiversity science, and climate change. The SANBI is also responsible for ensuring that biodiversity knowledge influences policy, management and decision making.

Its biome programmes, which focus on South Africa's biodiversity hotspots, ensure that the country's most important biodiversity regions, such as grasslands, wetlands and succulent Karoo, are protected in a sustainable and beneficial way.

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

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

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

Environmental resources

National botanical gardens

The SANBI manages the 10 national botanical gardens, classified as conservation gardens, in seven provinces. Together, they conserve more than 7 500 ha of natural vegetation and associated biodiversity within their boundaries.

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

The botanical gardens are:

- Kirstenbosh, Cape Town,
- Pretoria, Tshwane,
- Harold Porter, Betty's Bay,
- Walter Sisulu, Roodepoort,
- Hantam, Nieuwoudtville,
- Free State, Bloemfontein,
- Karoo Desert, Worcester,
- KwaZulu-Natal, Pietermaritzburg,
- Lowveld, Nelspruit, and
- Kwelera, East London.

The SANBI is also managing what is scheduled to become South Africa's 11th national botanical garden – the Thohoyandou Botanical Garden, in the far north-eastern corner of Limpopo.

National Herbarium

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

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

Protected areas

The Convention on Biological Diversity (CBD), founded in 1992 at the Rio Summit, is a legally binding agreement on the use and conservation of biological diversity.

The CBD provides the framework for 196 parties to guide efforts to conserve and sustainably use biological diversity and equitably share the benefits from the use of genetic resources. In October 2010, the parties approved the Strategic Plan for Biodiversity for 2011 – 2020, including 20 Aichi Targets. There are a number of management categories of protected areas in South Africa, which conform to the accepted categories of the International Union for Conservation of Nature (IUCN).

South Africa has 528 protected areas, of which 20 are marine, totalling 7.5 million ha or 6.2% of the country's land area. South Africa plans to expand the conservation areas under formal protection to the international standard of 10% of the total area of the country.

The DFFE works closely with landowners to ensure their participation in the Stewardship Programme, which allows land owners to use their land for biodiversity and conservation purposes. This is aimed at expanding the country's conservation estate.

Scientific reserves

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

Wilderness areas

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

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

Transfrontier conservation areas (TFCAs)

A TFCA is a cross-border region. The conservation status of the areas within a TFCA ranges from national parks, private game reserves and communal natural resource management areas to hunting-concession areas. Although fences, highways, railway lines or other barriers separate the constituent areas, they are managed jointly for the long-term sustainable use of natural resources.

Unlike in transfrontier parks, free movement of animals between the components of a TFCA is not always possible. TFCAs facilitate and promote regional peace, cooperation and socio-economic development.

The success of TFCAs depends on community involvement. In turn, TFCAs provide local communities with opportunities to generate revenue.

The seven TFCAs are:

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

Biosphere reserves

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

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

South Africa's biosphere reserves include:

- The 100 000-ha Kogelberg Reserve on the country's southern coast is in the middle of the Cape Floral Region and home to 1 880 different plant species, 77 of which are found only in this region.
- The Cape West Coast Biosphere Reserve starts in Cape Town in the southern suburb of Diep River and stretches up the west coast as far as the Berg River, encompassing parts of the Cape Floral Region. The reserve includes the Ramsar-protected Langebaan Lagoon as well as Dassen Island, which is home to a penguin colony.
- The Cape Winelands Biosphere Reserve includes a part of the Cape Floral Region, as well as the wine-growing region.

In the north there is the Waterberg Biosphere Reserve, an area of some 400 000 ha in Limpopo. It is an important catchment area for the Limpopo Basin, with four large rivers originating within its borders – the Lephalale, Mokolo, Matlabas and Magalakwena rivers.

The Kruger-to-Canyons Biosphere Reserve stretches from the Kruger National Park to the Blyde River Canyon. It is an important conservation area as it covers three biomes.

The Gouritz Cluster Biosphere Reserve is recognised by the UNESCO in terms of the Man and Biosphere Programme.

World heritage sites

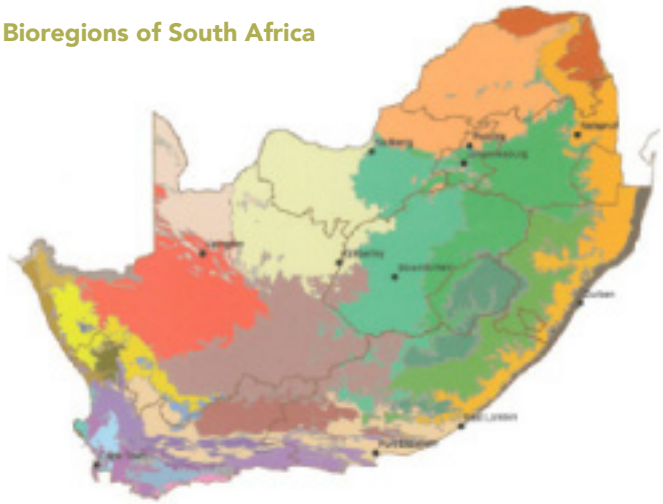
A UNESCO world heritage site is listed by the organisation as being of special cultural or physical significance. The organisation catalogues, names and conserves sites of outstanding cultural or natural importance to the common heritage of humanity.

While each world heritage site remains part of the legal territory of the province wherein the site is located, the UNESCO considers it in the interest of the international community to preserve each site.

For site to be awarded a world heritage status, it has to be recognised as having global historical or environmental significance, signify a phenomenal achievement of humanity or reveal ancient civilisations. The recognition allows the country to access funds for conservation from the World Heritage Fund. To be accepted onto the list, a country must meet stringent criteria and show how the site will be conserved.

South Africa has 10 world heritage sites proclaimed by the UNESCO:

Bioregions of South Africa



- **Robben Island** is situated 11 kilometres (km) offshore from Cape Town – the island is most famous as the place where Nelson Mandela was imprisoned. It is now home to the world-renowned Robben Island Museum and has become a popular tourist attraction.
- **iSimangaliso** was listed as South Africa's first world heritage site in December 1999 in recognition of its natural beauty and unique global values The 332 000-ha park contains three major lake systems, eight interlinking ecosystems, 700-year-old fishing traditions, most of South Africa's remaining swamp forests, Africa's largest estuarine system, 526 bird species and 25 000-year-old coastal dunes – among the highest in the world. The name iSimangaliso means "miracle" and "wonder". The park also has four Ramsar sites.
- **The Cradle of Humankind** consists of the hominid fossil sites at Swartkrans, Sterkfontein and Kromdraai. The world heritage status of Sterkfontein's fossil hominid sites was extended in July 2005 to include the Taung skull fossil site in North West province and Mokopane Valley in Limpopo. The Cradle of Humankind has one of the world's richest concentrations of hominid fossils that provide evidence of human evolution over the past 3.5 million years. Found in Gauteng and North West, the fossil sites cover an area of 47 000 ha. The remains of ancient forms of animals, plants and hominids are encased in a bed of dolomite

deposited around 2.5 billion years ago. In April 2010, a new species of hominid, Australopithecus sediba, estimated to be two million years old, was discovered in the Cradle of Humankind.

- **The Ukhahlamba-Drakensberg Park** (a mixed natural and cultural site) is a world heritage site covering 242 813 ha (2 428 square km (km²). The park spans parts of South Africa and Lesotho. The park includes the Royal Natal National Park, a provincial park, and the Drakensberg National Park, which covers part of the Drakensberg, the highest mountain in southern Africa. Under the Ramsar Convention, the park is in the List of Wetlands of International Importance.
- **Mapungubwe Heritage Site**: In September 2011, the DFFE, SANParks and Coal of Africa Limited signed a historical Memorandum of Agreement (MoA) as part of the environmental authorisation issued in accordance with the NEMA of 1998, to ensure the integrity of the Mapungubwe Cultural Landscape World Heritage Site. According to the MoA, the integrity of the world heritage site will be maintained through comprehensive biodiversity offset programmes, thereby optimising benefits to local communities.
- **Cape Floral Region**: The smallest of the six recognised floral kingdoms of the world, is an area of extraordinarily high diversity and home to more than 9 000 vascular plant species, of which 69% are endemic. Much of this diversity is associated with the fynbos biome. The economical worth of fynbos biodiversity, based on harvests of fynbos products (e.g. wildflowers) and ecotourism, is estimated to be in the region of R77 million a year. In July 2015, the UNESCO approved the extension of the Cape Floral Region Protected Areas World Heritage Site. At the time of inscription, the site was made up of eight protected areas comprising about 553 000 ha. The eight protected areas are located in the Eastern Cape and the Western Cape. The extension brings the size of the world heritage site to 1 094 742 ha and increases the number of protected area clusters making up the Cape Floral Region from eight to 13.
- **The Richtersveld Cultural and Botanical Landscape** covers 160 000 ha of dramatic mountainous desert in the North West province. It is the only area where the Nama still construct portable rush-covered domed houses, or Iharu oms.
- **Vredefort Dome**: About 120 km south-west of Johannesburg, is a representative part of a larger meteorite impact structure, or astrobleme. Dating back more than two million years, it is the oldest astrobleme yet found on Earth. With a radius of 190 km, it is also the largest and the most deeply eroded.The Vredefort Dome bears witness to the world's greatest known single energy release event, which had devastating global effects including, according to some scientists, major evolutionary changes. It provides evidence of the Earth's geological history and is crucial to understanding the evolution of the planet. Despite the importance of impact sites to the planet's history, geological activity on the Earth's surface has led to the disappearance of evidence from most of them, and Vredefort is the only example to provide a full geological profile of an astrobleme below the crater floor.
- **The Khomani Cultural Landscape covers** 959 100 ha, forming part of the Kgalagadi Transfrontier Park and including the whole Kalahari Gemsbok National Park, associated with the former San hunter-gatherers. It is a vast desert area associated with Khomani San culture since the Stone Age.
- **The Barberton Makhonjwa Mountains**: Situated in Mpumalanga, the site comprises 40% of the Barberton Greenstone Belt, one of the world's oldest geological structures. These represent the best-preserved succession of volcanic and sedimentary rock dating back 3.25 to 3.6 billion years. It features meteor-impact fallback breccias resulting from the impact of meteorites formed just after the Great Bombardment (4.6 to 3.8 billion years ago). It has attracted researchers from all over the world because of its most exposed layers of rock formations. Scientists found fossilised bacteria under thin layers of rock thought to be 3.2 billion years old.

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

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

Wetlands

The IUCN identifies wetlands as the third most important support system on Earth. Wetlands make up only 2.4% of South Africa's surface area but they are responsible for a disproportionately high value of ecological infrastructure that provides critical ecosystem services such as water purification and flood regulation, among others.

Wetlands support a range of specialised plant, insect and mammal life and also supply food, grazing, building and craft material. They are able to improve water quality, reduce flood impacts, control erosion and sustain river flows. Of special importance is the role wetlands play in ensuring a steady supply of clean water for communities and helping government save hundreds of millions of rands that would be required to set up purification plants/facilities.

South Africa was one of the first six countries to become a signatory to the Convention on Wetlands of International Importance, called the Ramsar Convention, when it came into force in 1975. It is an intergovernmental treaty that provides the framework for national action and international cooperation for the conservation and wise use of wetlands and their resources.

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

South Africa has 22 Ramsar sites, including:

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

World Wetlands Day is celebrated annually on 2 February. World Wetlands Day 2021 was held under the theme; "Wetlands and Water". Wetlands are rich with biodiversity and are a habitat for a dense variety of plant and animal species. Latest estimates show a global decline of biodiversity, while wetlands are disappearing three times faster than forests. The theme is a unique opportunity to highlight wetland biodiversity, its status, why it matters and promote actions to reverse its loss.

South Africa is one of the contracting parties to the Ramsar Convention. One of the obligations of the contracting parties to the convention is to commemorate World Wetlands Day.

South Africa is a water scarce country, and the water in many streams is polluted. Both droughts and floods are common. In this regard, wetlands play a vital role by removing toxic substances and sediment from water, while also improving downstream water quality and the overall health of communities.

Wetlands are able to reduce the severity of droughts and floods by regulating stream flow. They also help to purify water and provide a habitat for many different plants and animals. Besides these indirect

benefits to society, wetlands provide many direct benefits in the form of resources, such as fibre for making crafts, as well as recreational opportunities. However, lack of community awareness on the value and benefits of wetlands often leads to their transformation by humans.

Marine protected areas (MPAs)

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

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

South Africa's MPAs include:

- Aliwal Shoal, KwaZulu-Natal
- Betty's Bay, Western Cape
- Bird Island, Eastern Cape
- De Hoop, Western Cape
- Dwesa-Cwebe, Eastern Cape
- False Bay, Western Cape
- Goukamma, Western Cape
- Hluleka, Eastern Cape
- iSimangaliso, KwaZulu-Natal
- Langebaan Lagoon, Sixteen Mile Beach, Malgas Island, Marcus Island, Jutten Island, Western Cape
- Pondoland, Eastern Cape
- Robberg, Western Cape
- Sardinia Bay, Eastern Cape
- Stilbaai, Western Cape
- Table Mountain, Western Cape
- Trafalgar, KwaZulu-Natal
- Tsitsikamma, Western Cape.

Zoological gardens

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

The 85-ha NZG houses 3 117 specimens of 209 mammal species, 1 358 specimens of 202 bird species, 3 871 specimens of 190 fish species, 388 specimens of four invertebrate species, 309 specimens of 93 reptile species and 44 specimens of seven amphibian species. It plays a major role in the conservation of wildlife, maintaining one of the largest animal collections in Africa.

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

As a member of the World Association of Zoos and Aquariums and the African Association of Zoos and Aquaria, the NZG participates in several endangered species management programmes and successfully breeds several endangered species of both continental and global significance. Among the endangered species the NZG contributes to conserving are the cheetah, rhino, ground hornbill, red-billed oxpecker and several endangered antelope species.

The animal collections of the NZG are the direct responsibility of the Animal Collection and Conservation Department which operates in two facilities: the main facility in Tshwane and the Mokopane Biodiversity Conservation Centre 200 km north of Tshwane.

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

It also plays an important role in conservation projects of both indigenous and internationally endangered animals.

The zoo joins other conservation organisations in programmes involving:

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

The Endangered Wildlife Trust is a major partner. Mitchell Park in Durban is the country's second-oldest zoo after the NZG. There are about 30 projects on the cards for the zoo, including cheetah and chimpanzee enclosures.

Breeding centres

There are a number of game-breeding centres in South Africa. The NZG of South Africa is responsible for the management of the Mokopane Biodiversity Conservation Centre, covering 1 333 ha.

The centre supplements the NZG's breeding programme for various endangered animals, and its own animal collection. It is home to an abundance of exotic and indigenous fauna, such as the lemur, the rare tsessebe, roan antelope and black rhino. The De Wildt Cheetah and Wildlife Centre near Pretoria is best known for its captive breeding programme that contributed to the cheetah being removed from the endangered list in the South African Red Data Book – Terrestrial Mammals in 1986. De Wildt also breeds a number of rare and endangered African species.

The most spectacular of these is the magnificent king cheetah, which is a true cheetah, but with a variation in coat pattern and colouring. De Wildt also plays a major role in breeding and releasing wild dogs.

It has donated breeding nuclei of the highly endangered riverine rabbit and suni antelope to the Kruger National Park.

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

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

The centre caters for, among other animals, five species of vulture: Cape griffins as well as white-backed, hooded, white-headed and lappet-faced vultures. The centre is also known for its wild dog breeding programme. The Hoedspruit Research and Breeding Programme includes the rare black-footed cat, vulnerable African wild cat, ground hornbills (in cooperation with the NZG), the bald ibis and the endangered blue crane. Elephant, white rhino, buffalo, caracal, sable antelope, bushbuck and tsessebe have also been cared for and rehabilitated there.

Aquariums and oceanariums

There are aquariums in Pretoria, Port Elizabeth, Cape Town, Durban and East London. The Aquarium and Reptile Park of the NZG in Pretoria is the largest inland aquarium in Africa, with the largest collection of freshwater fish.

It is also the only aquarium in South Africa that exhibits a large variety of marine fish in artificial sea water and the only inland aquarium housing ragged-tooth sharks. The Port Elizabeth Oceanarium is one of the city's major attractions. Exhibits include an underwater observation area, a dolphin research centre, and various smaller tanks containing 40 different species of bony fish and two larger tanks that display sharks and stingrays.

The Two Oceans Aquarium at the Victoria and Alfred Waterfront, Cape Town, has more than 3 000 specimens representing some 300 species of fish, invertebrates, mammals, birds and plants supported by the waters along the Cape Coast.

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

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

Snake and reptile parks

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

The Aquarium and Reptile Park at the NZG houses 80 reptile species from all over the world. The Hartbeespoort Dam Snake and Animal Park near Pretoria features one of the finest reptile collections in southern Africa. It offers seal shows and snake-handling demonstrations. The Pure Venom Reptile Farm is one of the largest of South Africa's reptile parks. It is inland from Shelly Beach, on KwaZulu-Natal's South Coast.

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

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

Managing environmental resources

Wildlife protection

The Convention on the International Trade in Endangered Species of Wild Fauna and Flora (CITES) states that big cats, which are among the most widely recognised and admired animals, are facing many and varied threats caused mostly by human activities worldwide.

South Africa adheres to the principle of sustainable utilisation of natural resources, as well as principles set out in the NDP aimed at creating a climate-resilient society while growing the economy and increasing jobs. As such, a range of measures have been introduced to ensure that lion, leopard and cheetah populations are conserved and properly managed. This includes the implementation of a Biodiversity Management Plan for the African Lion.

The Scientific Authority of South Africa conducted a Non-Detriment Finding (NDF) as required by the CITES. The NDF for lions state that there are currently no major threats to the wild and managed lion populations in South Africa, although the management of re-introduced wild lion needs some improvement. Minor, but non-detrimental threats include over-utilisation, disease, poaching and conflict with communities around protected areas.

Wildlife crime not only threatens natural resources, but also the economy through financial burdens and the loss of economic and development opportunities. As a country richly endowed with natural resources, South Africa is not immune to these challenges with criminal syndicates targeting iconic species, such as the cycad, rhino, elephant and lion, as well as species not often considered as being under threat – birds, tortoises, lizards and snakes. In the 2020/21 financial year, the Green Scorpions conducted three and a half thousand inspections, issued 971 administrative enforcement notices, and handed over 203 criminal investigations to the National Prosecuting Authority (NPA) for prosecution.

The declaration of wildlife crime as a priority crime in South Africa has resulted in a multidisciplinary, multi-sectoral approach focused on collaboration through the national security structure. This involves border and customs officials, the NPA, the South African Police Service (SAPS) and institutions such as the Airports Company of South Africa, which manages international airports.

The country has also introduced the development of critical skills aimed at increasing its capacity to detect and investigate these crimes. The DFFE is currently working with World Wide Fund for Nature on a project to increase the country's ability to tackle wildlife trafficking. This project, funded by the United States Department of State's Bureau of International & Law Enforcement Affairs, focuses on the development of further training materials to bolster the country's national compliance and enforcement programme, including an e-learning platform for officials, audio visual materials, specific curriculum and manuals.

Traveller awareness material has also been developed to highlight the threat that wildlife crime poses to the rich biodiversity and encouraging people not to support the illegal trade in wildlife.

EMIs in the DFFE check consignments of wildlife for exports from South Africa to ensure that they meet all legal requirements. About 300 legal wildlife-related consignments are exported/imported on a monthly basis at the OR Tambo International Airport.

The South African Revenue Service (SARS) K9 unit at OR Tambo International Airport uses specialist sniffer dogs to detect attempts to smuggle wildlife into South Africa.

Rhino poaching

Rhino poaching has been declared a National Priority Crime, and government continues to work as a team in the implementation of the Integrated Strategic Management of Rhinoceros.

This is a multi-sectoral, interdisciplinary approach which involves various stakeholders, including the SANParks, the Department of Home Affairs, the Department of Defence, the the SAPS and the Hawks, the State Security Agency, the SARS, the Department of Justice and Constitutional Development (DOJ&CD) and provincial conservation authorities.

South Africa's largest game reserve, the Kruger National Park, houses a court which is expected to combat rhino poaching. The Skukuza Regional Court periodically sits once a week.

While South Africa has recorded a 24% decrease in rhino poaching compared to the pre-COVID period in 2019, there has been an increase in poaching on private properties. A total of 451 rhino were poached in South Africa in 2021, with 327 poached within government reserves, while 124 were poached on private property.

In 2021, a total of 209 rhino were poached for their horns in South African National Parks (SANParks) – all in the Kruger National Park.

This was a decrease in comparison to 2020, when 247 rhino were poached within the national parks. None of SANParks' smaller rhino parks experienced rhino losses from poaching in 2021, in comparison to the two rhinos that were poached in 2020.

The steady decline in rhino poaching in the Kruger National Park is related to an increase in the intensity of anti-poaching activities. A close working relationship between the police's endangered species unit, the SANParks Environmental Crimes Inspectorate has resulted in increased arrests and convictions.

South Africa remains committed to safeguarding the country's rhino populations, and will continue to work with the private sector, committed non-governmental organisations, as well as authorities in transit and destination countries, to combat wildlife crime. In 2021, there were 189 arrests in connection with poaching activities, with 77 of them within the Kruger National Park and 109 outside the park.

In the 38 verdicts handed down by the courts, 37 cases resulted in the conviction of 61 accused rhino poachers/traffickers. In addition, SANParks, provincial nature reserves and private rhino owners are dehorning rhino to deter poachers, while SANParks is investigating the feasibility of additional actions such as anti-poaching initiatives focused on apprehending poachers and establishing additional founder populations outside the Kruger National Park.

Managing rhino populations

The biological management initiative focuses on continued movement of rhinos to expand ranges and support rhino strongholds. In small parks and provincial reserves, the translocation of rhinos seeks to mimic how young animals disperse naturally.

Within the Kruger National Park, the translocation of rhinos from the Kruger as part of South Africa's biological management innovations of expanding ranges and establishing additional rhino strongholds are challenged by the emergence of bovine tuberculosis in both black and white rhino, albeit at low incidence.

South Africa's veterinary regulations require several procedures to ensure that translocated rhinos do not serve as a source of spreading the disease into commercial stock production areas of South Africa. The development of efficient systems to overcome this challenge is in progress.

Even so, innovative biological management have used translocations within the Kruger National Park as a mechanism to direct poaching to focus less on cows. This goes hand-in-hand with initiatives to dehorn rhinos embedded in strategic approaches that target individuals that frequent poaching hotspots, but more importantly, approaches that minimise the losses of cows.

Complimenting these interventions are guarding initiatives that focus on regular individual monitoring of individual rhinos. These combinations of interventions seek to maximise the breeding potential of both black and white rhinos.

The integrated initiatives of the SANParks to manage its rhino population have had varied successes. Within the Kruger National Park, the continued onslaught of poaching resulted in a continued decline of rhinos.

World Ranger Day

World Ranger Day is celebrated annually on 31 July. The 2022 event was held under the theme: "Diversity". In commemoration of the day, the DFFE paid tribute to field rangers for the incredible work they do to keep national parks and the country's iconic species safe.

World Ranger Day, which is supported by the International Rangers Federation, is held annually to commemorate rangers killed or injured in the line of duty, and celebrates the work rangers do to protect the our natural and cultural treasures.

In South Africa, game rangers stand up to poachers almost daily as they battle to end the decimation of wildlife species, ranging from the poaching of rhino and abalone to the illegal removal of plants such as cycads and Proteas.

To support the efforts of rangers, the DFFE, in collaboration with provincial conservation and parks authorities, the private sector and NGOs, continues to implement the decisions of the Rhino Lab (a discussion platform with outcomes aligned with key areas of rhino conservation, including management of rhino populations and law enforcement), with the latest initiative focusing on demarcating specific wildlife zones to ensure that additional resources are directed to high risk areas.

The DFFE's Environmental Enforcement Fusion Centre coordinates

and improves the reactive and proactive response to rhino poaching and other wildlife crime. It has begun to consolidate rhino protection efforts across the country, standardising and boosting tactical level anti-poaching and introducing integrated information-led enforcement.

This strengthens the essential collaboration with the SAPS, the Directorate for Priority Crime Investigation, the DOJ&CD and other sectors of the security forces to gather, analyse and share intelligence on wildlife trafficking to ensure that the international syndicate-related crimes can be effectively dealt with.

International cooperation

International cooperation remains a critical component of the overall response strategy to halt rhino poaching and related wildlife crime. South Africa continues to engage countries where rhino horn seizures take place in order to request that samples of the rhino horn DNA be sent to the country for analysis in line with the CITES resolutions.

This enables the country to link the seized horns to poaching cases and live rhino or rhino horn stockpiles, thus providing key information to further support investigations and understand transit routes. The Hawks have also received very good co-operation from China, Hong Kong, Malaysia, Singapore, Vietnam and Japan in their efforts to combat wildlife trafficking.

Marine pollution and sustainability

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

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

With 80% of marine pollution emanating from land-based activities, the DFFE plans to implement the National Programme of Action for Land-based Sources of Pollution, while refining strategies for combating marine pollution from oil spills.

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

Protecting the coastline

To counter illegal activities along the coastline, as well as the country's 1 155 000-km2 Exclusive Economic Zone (EEZ), the DFFE boosted its compliance unit with the appointment of more than 80 fishery control officers and 100 honorary fishery control officers, after the implementation of the Honorary Fishery Control Officers Policy.

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

The vessels also conduct multilateral patrols in the Southern African Development Community coastal states.

The Phakisa approach

Operation Phakisa enables government to implement its policies and programmes better, faster and more effectively.

The initiative was designed to fast-track the implementation of solutions on critical development issues. This is a unique initiative to address issues highlighted in the NDP Vision 2030 such as poverty, unemployment and inequality.

The DFFE has registered notable progress with regards to Operation Phakisa: Oceans Economy; Chemicals and Waste Phakisa and Operation Phakisa: Biodiversity Economies.

Operation Phakisa: Oceans Economy

South Africa is a maritime nation with jurisdiction over one of the largest exclusive economic zones in the world. The country's oceans represent a significant asset for current and future generations, with enormous economic potential, in aquaculture, bioprospecting, marine ecotourism, extractive industries, and less obvious benefits of healthy ecosystem services, such as climate regulation, carbon storage and waste absorption.

By May 2021, the growing Oceans Economy had contributed R41 billion to South Africa's GDP, creating 26 764 jobs in six focus areas, including marine transport and manufacturing, offshore oil and gas exploration, aquaculture, small harbours development, coastal and marine tourism, marine protection services and ocean governance.

The DFFE continues to unlock the economic potential of South Africa's oceans, growing the GDP and creating more sustainable jobs – while ensuring that the country's oceans and coastal ecosystems are sustainably managed.

Highlights include the development of the National Guideline Towards the Establishment of Coastal Management Lines. This is intended to minimise risks posed by short- and long-term coastal processes such as storm surges, erosion and sea level rise. A national coastal access strategy is also being development to provide guidance around the public's access to closed off beaches.

Marine pollution is another challenge that threatens fragile ecosystems. South Africa has a number of measures in place to tackle this problem, including the National Pollution Laboratory operated by the Walter Sisulu University, which is expected to start working in the near future. The lab will allow for in depth analysis of the samples that could not be done through mobile laboratories.

In addition, South Africa is amongst the countries that have endorsed the UN Environmental Programme's Clean Seas Campaign. The campaign is aimed at stepping up international, regional and national efforts to combat marine litter. As part of the campaign, the DFFE has announced the piloting of its Source-to-Sea Initiative – a strategy to investigate and combat pollution, in particular plastic pollution which threatens both freshwater and marine ecosystems.

The oceans have the potential to contribute up to R177 billion to the GDP and create over one million jobs by 2033.

Operation Phakisa: Oceans Economy MPAs

The gazetting of a network of 20 representative Operation Phakisa: Oceans Economy MPAs, has increased South Africa's marine ecosystem area under protection in the country's EEZ, from 0.4% to 5.4%, to provide protection to 90% of habitat types, as well as contribute to global protection in line with South Africa's international commitments.

The network strives to support multiple objectives for biodiversity in alignment with the Oceans Economy goals. The MPAs represent seamounts, submarine canyons, volcanic pinnacles and a variety of ecosystem types on the shelf, continental margin and abyss in both the Indian and Atlantic oceans. It also provides the first protection for several threatened and fragile ecosystem types, including threatened mud, gravel, and shelf edge habitats and sensitive deep water scleractinian, stylasterine and soft coral-dominated ecosystem types.

The 20 MPAs will, among other things, contribute to fisheries sustainability, advance marine ecotourism and help maintain resilience in ecosystems that are under stress from climate change.

Work on these MPAs dates back to 2014, when government endorsed a plan to achieve, as part of Operation Phakisa: Ocean Economy, a viable network of MPAs. South Africa's ocean space, which is one of the most varied in the world, is highly productive with rich biodiversity providing for living and non-living resources that contribute significantly to the country's economy and to job creation. MPAs provide safe spaces in which fish can breed undisturbed.

They are essential to maintain eco-certification of the South African deep-sea trawl fishery. This certification process assesses whether habitat and nursery areas for hake fishery are adequately protected. MPAs also contribute to growing South Africa's marine eco-tourism sector by providing undisturbed natural habitat for whales, sharks, seals, dolphins, turtles and seabirds for international and domestic tourists to experience.

An adequate network of MPAs will also provide the basis for ongoing resilience to the impact of climate change. Oceans are an essential component of the climate system, absorbing and transferring heat, and regulating the exchange of carbon dioxide with the atmosphere. With increasing carbon dioxide levels and rising ocean temperatures, this regulatory capacity is at risk. The network of MPAs will assist in building ecological resilience, and therefore social and economic resilience in the growing Oceans Economy.

Operation Phakisa: Biodiversity Economy

South Africa has a multi-faceted approach to the management of its rich natural heritage. The approach focuses on an inclusive, value-chain approach to the development of the biodiversity economy, taking into consideration the fact that communities are the primary custodians of the country's biodiversity.

Operation Phakisa: Chemicals and Waste

Waste economy has the potential to address inequality, poverty alleviation and create jobs. The DFFE continues to support waste pickers through various programmes, such as the Recycling Enterprise Support Programme.

The primary objective of the programme is to provide developmental funding for projects in the form of start-up grants. These projects are either start-up or pre-existing enterprises establishing buy-back centres, material recovery facilities, construction and demolishing solutions and plastic palletisation plants in line with the Operation Phakisa initiatives.

With regard to chemicals, Cabinet has recommended that South Africa should ratify the Minamata Convention on Mercury and the Kigali Amendment to the Montreal Protocol on the Protection of the Ozone Layer. The Kigali Amendment will have co-benefits for mitigating climate change and ozone-depletion.

The South African Government is also committed to minimise plastic pollution. The DFFE recently conducted a Plastic Material Study and is in the process of consulting with the cosmetics industry to phase out the use of microbeads in cosmetics. Plans are also underway to review the impact of the implementation of plastic bag policies.

In addition, the DFFE will continue to work with the packaging sector (paper, glass, plastic and metal) to raise the amount of waste diverted from landfill to above 58%.

The department is expected to launch the Keep South Africa Clean Campaign with the aim of mobilising citizens to become environmentally conscious and create a South Africa free of litter and illegal dumping.

Chemicals and waste management

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

- Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade;
- Stockholm Convention on Persistent Organic Pollutants;
- Montreal Protocol on Substances that Deplete the Ozone Layer;
- Basel Convention on the Control of Trans-boundary Movement of Hazardous Wastes; and
- Strategic Approach to International Chemicals Management, which is governed by the International Conference on Chemicals Management.

South Africa had a significant role in negotiations concerning the Intergovernmental Negotiating Committee to prepare a global legally binding instrument on mercury, including research into coal-dependent power or electric stations and the situational analysis of mercury in the country.

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

The 2020 National Waste Management Strategy gives effect to the terms of the National Environmental Management: Waste Act of 2008. It directs the environmental protection programmes. It also drives a sustainable and environmentally friendly, inclusive economic growth, with three focus pillars – waste minimisation, effective and sustainable services, and waste awareness and compliance.

Waste Management Bureau

The Waste Management Bureau aims to reduce waste through recycling. The bureau monitors recycling plans and provides specialist services to government and recycling companies.

Over the medium term, the bureau plans to introduce tyre recycling initiatives. The bureau also plans to introduce the Recycling Enterprise Support Programme, which will provide support services, training and advice to transporters, storage depot operators and tyre recyclers.

An amount of R155 million over the medium term has been allocated to the plastics programme, which will promote waste minimisation, create awareness in the plastics industry, expand collector networks and support rural collection through building the capacity of small-, medium- and micro-enterprises.

The National Regulator for Compulsory Specifications also receives transfers of R22.5 million over the medium term, to implement compulsory specifications for plastic bags.

Youth Jobs in Waste and Township Greening

These projects are funded by the DFFE through its Environmental Protection and Infrastructure programme and aims to contribute towards poverty alleviation while empowering beneficiaries to participate in the mainstream economy.

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

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

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

The department has funded numerous projects within the Randfontein Municipality, which are being implemented using labour-intensive methods in line with the EPWP, with an aim of 58% women employment, 65% youths and, of those, 2% being people with disabilities.

The waste sector has been identified as a key role player in achieving the goal of economic upliftment through job creation as the DFFE works towards reaching the NDP's goal of creating an environmentally sustainable, climate change resilient, low-carbon economy and just society by 2030.

The Youth Jobs in Waste Programme was designed to address some of the critical areas of assistance, including capacity-building, where youths are placed in municipalities for a period of a year to assist with administration relating to waste collection and planning.

Recycling

The National Recycling Forum is a non-profit organisation created to promote the recovery and recycling of recyclable materials in South Africa.

Members of the forum include representatives of:

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

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

- provides a national communication forum for key players in the field of recycling;
- interacts with central and provincial government to encourage the recycling of glass, paper, plastics, tin plate steel, used oil and electrical and electronic waste;
- facilitates the formation of regional forums that draw their memberships from enthusiastic and interested volunteers as well as small recyclers, in the major centres of South Africa; and
- encourages the establishment of buy-back centres and drop-off points through the activities of its members in the various centres.
- Collect-a-Can, one of the oldest recycling initiatives in South Africa, has been instrumental in creating a culture of recycling in the country. It has obtained local and international acclaim for its contribution towards protecting the environment, as well as its significant contribution to job creation and poverty alleviation.

The founders of Collect-a-Can, ArcelorMittal South Africa and Nampak, started the company 23 years ago to proactively address the steel beverage can industry's responsibility to the environment. Their Cash for Cans initiative encourages cans to be collected and sold to Collect-a-Can for cash, because recovery and recycling aids job creation in many communities and creates an additional source of income for schools, NGOs, and other community groups.

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

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

Clean-up and Recycle SA Week

The Clean-up and Recycle SA Week is an annual initiative by the local plastics industry, supported and endorsed by various packaging and retail streams and retailers. Each year, close to 120 000 volunteers participate in these clean-up activities that take place along roadsides, rivers, schools, residential and illegal dumping areas. The initiative

is supported by the DFFE, provincial governments, municipalities, environmental organisations, businesses, schools and communities with the intention to promote and unite the world's approach towards clean-up campaigns initiatives.

The DFFE has been celebrating the Clean-up and Recycle Week SA through awareness-raising activations to encourage communities to know the benefits of keeping their environment clean and diverting their waste away from landfill sites through innovative means either through reduction, reuse, repurpose, recycle or upcycle of their waste materials.

The Clean-up and Recycle SA Week's objectives are clearly aligned with those of the Good Green Deeds Programme as it seeks to highlight the importance of active citizenry in the protection and management of natural resources and pollution in the neighbourhoods they live in, rivers, oceans and the role they play in the lives of all South Africans.

Climate change and air-quality management

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

Government continues to engage actively and meaningfully in international climate change negotiations, specifically with the UNFCCC. The policy implementation actions and activities flowing from this include the analysis of mitigation potential in key economic sectors as the basis for the establishment of desired emission reduction outcomes and defining the optimal mix of measures for achieving those outcomes, with the greatest benefit and least cost to the economy.

Air quality remains an important and challenging environmental issue in South Africa. Technical and legislative tools have been developed to roll-out and monitor the implementation of national environmental management, including the:

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

Several of these tools were under review to accelerate the ongoing implementation of the Air Quality Act of 2004. The South African Air Quality Information System (SAAQIS) contains the latest updated data on locations and can give the status of air quality or pollution for a specific day and time on its website: www.saaqis.org.za. The DFFE and the SAWS have upgraded the SAAQIS. South Africans can now view the state of air live from the government monitoring network on their smart phones and other gadgets.

A number of air quality monitoring stations, mostly in Mpumalanga, eThekwini Municipality, the City of Johannesburg and the City of Tshwane, report to the SAAQIS. South Africa reached the legally binding climate change agreement at the 21st Conference of the Parties to the UNFCC in Paris, France in December 2015.

The agreement was the culmination of a four-year negotiation process that was initiated in Durban in 2011 at the 17th Conference of the Parties to the UNFCCC. South Africa is among the countries that have signed the Paris Agreement – committing to ensuring that the country continued to play a positive role in the building of a low-carbon, job-creating and pro-development green economy.

Environmental impact management

The environmental impact assessment is a tool to advance sustainable development. South Africa's environmental impact assessment regulations are:

- streamlining the environmental impact assessment process;
- introducing an approach where impact on the environment gets more attention; and
- introducing a listing notice dedicated to activities planned for predefined sensitive areas.
- The Environmental Assessment Practitioners Association of South Africa (EAPASA) aims to:
- achieve effective quality assurance in environmental assessment practice in South Africa;
- promote the empowerment of black and female professionals within the environmental assessment field;
- encourage continued professional development for environmental assessment practitioners; and
- promote awareness of the purpose and practice of environmental assessment in South Africa.

The DFFE is already fully integrating impact assessments on waste and environmental impact assessment. In order to advance and fast-track environmental authorisations for key infrastructure projects, the department continues to undertake Strategic Environmental Assessments.

The vast scientific information from these assessments have aided in the streamlining of decision making for South Africa's Strategic Infrastructure Projects led by The Presidency.

Aquaculture

Aquaculture incorporates the breeding, trading or rearing of aquatic organisms in a controlled or selected aquatic environment for recreational, commercial or subsistence purposes. It is divided into freshwater culture and mariculture.

Species farmed in the latter include dusky kob, abalone, Pacific oysters, Mediterranean mussels and black mussels, among others.

According to the National Aquaculture Strategic Framework, the sector is relatively small and government wants to create a climate in which it can grow. Special attention will be paid to freshwater aquaculture, as it has shown growth potential.

Government is also planning to boost investments in research, development technology, transfer and extension, as well as education and training programmes in aquaculture. Abalone fishing is severely restricted in South African waters, however, poaching is rife, as it is a lucrative trade.

Poaching has caused the decline in abalone numbers over the years. The species is highly coveted and fetches high prices, especially in the Far East.

The National Aquaculture Policy Framework was developed against the backdrop of a global aquaculture sector that has seen an increased demand for fishery products.

The policy provides a unified framework for the establishment and development of an industry that contributes towards sustainable job creation and increased investment. In South Africa, marine and freshwater aquaculture presents a good opportunity to diversify fish production to satisfy local demand; contribute to food security, job creation, economic development and rural development; and improve export opportunities.

Aquaculture has been given a boost through its inclusion in the Oceans Economy: Operation Phakisa. While the marine-based mariculture part of aquaculture has been around for some years, focusing on species such as abalone, oysters and mussels, freshwater aquaculture is experiencing a rapid expansion, owing in part to government's multipronged aquaculture promotion campaign.

Globally, wild fish stocks have been dwindling, growing at a modest 1% per annum, while aquaculture has grown by 7% and accounts for 44% of the global fish production. As such, aquaculture is seen as a quick win for growing the Oceans Economy.

Erosion and desertification

The health of the country's soil is of great concern. Community-managed land has a potential to generate billions of rands worth of ecosystem benefits in South Africa through, for example, reduced pollution, clean water and erosion control. It adds that investment in avoiding land degradation and restoring degraded land makes sound economic sense and the benefits generally far exceed the costs.

As such, the country has managed to secure more than US$3.6 million through the Global Environment Facility's fund for the implementation of a project to address desertification, land degradation and the effects of drought in grazing lands in Limpopo and the Northern Cape.

Globally, negotiations are underway to discuss possible options for addressing drought under the United National Convention to Combat Desertification (UNCCD). According to the UN Environment Programme, desertification affects 900 million people in 99 countries, with 24 million metric tonnes (Mt) of topsoil being lost to erosion annually. The resultant land degradation costs Africa about US$9 billion every year. Most South African soil is unstable. The country loses an estimated 500 Mt of topsoil annually through erosion caused by water and wind.

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

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

South Africa also acts as the coordinator for the Valdivia Group for Desertification. The group consists of Argentina, Australia, Brazil, Chile, New Zealand, South Africa and Uruguay. The aim is, among other things, to foster scientific and technological cooperation.

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

Biodiversity

South Africa is home to some 24 000 species, around 7% of the world's vertebrate species, and 5.5% of the world's known insect species (only about half of the latter have been described).

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

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

South Africa ratified the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilisation to the CBD, popularly referred to as the Nagoya Protocol on Access and Benefit Sharing.

The protocol is a legally binding agreement outlining a set of terms prescribing how one country will gain access to another country's genetic resources and how the benefits derived will be shared.

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

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

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

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

- CBD Cartagena Protocol on Biosafety;
- Ramsar Convention;
- CITES;
- UNCCD; and
- Convention on Migratory Species.

The National Biodiversity Strategy and Action Plan 2015 – 2025 is aimed at establishing a framework and plan of action for the conservation and sustainable use of South Africa's biodiversity and the equitable sharing of benefits derived from this use.

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

The NBF and the National Protected Areas Expansion Strategy are important existing policy instruments for protection of species and ecosystems.

Through the release of the National Biodiversity Assessment by the SANBI, the country is able to better target future protected area expansion. The assessment has also assisted with South Africa's national and international reporting obligations, including the state of environment reporting, and the CBD Country Report – reporting against Aichi Targets or the Sustainable Development Goals. The revised NBF has been approved for public comment.

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

- Cape Floral Kingdom (equivalent to the fynbos biome);
- Succulent Karoo (shared with Namibia); and
- Maputaland-Pondoland-Albany Centre of Plant Endemism, which stretches from the Albany Centre in the Eastern Cape, through the Pondoland Centre of Plant Endemism and KwaZulu-Natal, and the eastern side of Eswatini, into southern Mozambique and Mpumalanga.
- The Succulent Karoo Biome is one of only two arid biodiversity hotspots in the world, the other being the Horn of Africa. There are eight major terrestrial biomes, or habitat types, in South Africa, which are divided into 70 veld types.

National biodiversity biomes

Savanna Biome

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

In the Northern Cape and Kalahari sections of this biome, the most distinctive trees are the camel thorn (acacia erioloba) and the camphor bush (tarchonanthus camphoratus). In Limpopo, the portly baobab (adansonia digitata) and the candelabra tree (euphorbia ingens) dominate. The central bushveld is home to species such as the knob thorn (acacia nigrescens), bushwillow (combretum spp.), monkey thorn (acacia galpinii), mopani (colophospermum mopane) and wild fig (ficus spp.). In the valley bushveld of the south, euphorbias and spekboom trees (portulacaria afra) dominate.

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

About 8.5% of the biome is protected. The Kruger National Park, Kgalagadi Transfrontier Park, Hluhluwe-Umfolozi Park, iSimangaliso and other reserves lie in the Savanna Biome.

Nama-Karoo Biome

The Nama-Karoo is the third-largest biome in South Africa, covering about 20.5% of the country or more than 260 000 km2. It stretches across the vast central plateau of the western half of the country. This semi-desert receives little rain in summer.

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

Most of the plants are low shrubs and grass. Many plants are deciduous. Trees such as the sweet thorn (acacia karoo) are usually only found along rivers or on rocky hillsides.

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

This biome includes the Namaland area of Namibia, and the central Karoo area of South Africa. Because of low rainfall, rivers are non-perennial. Cold and frost in winter and high temperatures in summer demand special adaptation by plants. Only 1% of the Nama-Karoo Biome falls within officially protected areas, of which the Karoo and Augrabies national parks are the largest. Overgrazing and easily eroded soil surfaces are causing this semi-desert to advance slowly on the neighbouring savanna and grassland biomes.

Grassland Biome

The Grassland Biome is the second-largest biome in South Africa, covering an area of 339 237 km2 and occurring in eight of South Africa's nine provinces. It is one of the most threatened biomes in South Africa, with 30% irreversibly transformed and only 1.9% of the biodiversity target for the biome formally conserved.

The Grassland Biome provides essential ecosystem services, such as water production and soil retention necessary for economic development. It holds important biodiversity of global and domestic significance and value.

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

The Grassland Biome has the third-largest number of indigenous plant species in the country. Eight mammal species endemic to South Africa occur in the wild in this biome. The area is internationally recognised as having high species endemicity for birds. The black korhaan, blue crane and guinea fowl are among the birds found in the area.

Succulent Karoo Biome

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

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

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

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

The animal life is similar to that of the neighbouring Fynbos and Nama-Karoo biomes. The biome includes 2 800 plant species at increased risk of extinction.

Fynbos Biome

The Fynbos Biome is one of the six accepted floral kingdoms in the world. This region covers only 0.04% of the Earth's land surface. Fynbos, which is found mainly in the Western Cape, is the name given to a group of ever-green plants with small, hard leaves (such as those in the Erica family). It is made up mainly of the protea, heathers and restio. The Fynbos Biome is famous for the protea, which is South Africa's national flower.

The biome also contains flowering plants now regarded as garden plants, such as freesia, tritonia, sparaxis and many others. Protected areas cover 13.6% of the Fynbos Biome and include the Table Mountain and Agulhas national parks. This biome is not very rich in bird and mammal life, but does include the endemic Cape grysbok, the geometric tortoise, the Cape sugarbird and the protea seed-eater. Baboon, honey badgers, caracal, the buck and several types of eagle and dassies are found in the mountains.

Forest Biome

South Africa's only significant natural forests are those of Knysna and Tsitsikamma in the Western and Eastern Cape respectively. Other reasonably large forest patches that are officially protected are in the high-rainfall areas of the eastern escarpment (Drakensberg mountains), and on the eastern seaboard. Forest giants such as yellowwood (podocarpus spp.), ironwood (olea capensis) and lemonwood (xymalos monospora) dominate.

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

Thicket Biome

The Thicket Biome is the second-smallest biome in South Africa and is known for its high biodiversity. Subtropical thicket ranges from closed shrubland to low forest, dominated by evergreen succulent trees, shrubs and vines. It is often impenetrable and has little herbaceous cover. Roughly 20% of the species found there are endemic to the Thicket Biome.

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

Desert Biome

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

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

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

The Desert Biome incorporates abundant insect fauna, which includes many tenebrionid beetles, some of which can use fog water. There are also various vertebrates, including reptiles, springbok, ostrich, gemsbok, snakes and geckos. Some areas in this biome are formally protected in the Richtersveld National Park.

International cooperation

Benguela Current Large Marine Ecosystem (BCLME)

The BCLME is regarded as one of the richest ecosystems on Earth, with ecosystem goods and services estimated to be worth at least US$54.3 billion a year. Offshore oil and gas production, marine diamond mining, coastal tourism, commercial fishing and shipping are some of the most important industrial activities that take place in the region.

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

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

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

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

United Nations Framework Convention on Climate Change

South Africa ratified the UNFCCC in 1997. The UNFCCC is aimed at:

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

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

With 195 parties, the UNFCCC has near universal membership and is the parent treaty of the 1997 Kyoto Protocol. The Kyoto Protocol has been ratified by 193 of the UNFCCC parties. Under the protocol, 37 states, consisting of highly industrialised countries and those making the transition to a market economy, have legally binding emission limitation and reduction commitments.

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

The launch of negotiations to shape the new global climate change agreement and first discussions on how to raise ambition took place at the UNFCCC in Bonn, Germany, in May 2012, which prepared decisions for adoption at the UNFCCC in Qatar later in 2012.

UN Commission on Sustainable Development (CSD)

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

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

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

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

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

The CITES was drafted as a result of a resolution adopted in 1963 at a meeting of members of the IUCN. The CITES accords varying degrees of protection to more than 30 000 animals and plant species, whether they are traded as live specimens, fur coats or dried herbs.

The DFFE, SANBI, the Scientific Authority and provincial authorities are working together to ensure full compliance with decisions taken at the 17th Conference of Parties to the CITES.

These include identifying and implementing protocols for the registration of over 1 000 facilities for breeding captive bred parrots; strengthening the monitoring of leopard populations to improve science-based decision making; and initiating a research project to understand how trade in lion bone may impact wild lion populations.

Montreal Protocol on Substances that Deplete the Ozone Layer

International Ozone Day is an annual event that commemorates the date of the signing the Montreal Protocol in 1987. South Africa, which became a signatory to the Montreal Protocol in 1990, has phased out chlorofluorocarbons, halons, methyl chloroform and carbon tetrachloride.

International Day for the Preservation of the Ozone Layer

The ozone layer, a fragile shield of gas, protects the Earth from the harmful portion of the rays of the sun, thus helping preserve life on the planet. The International Day for the Preservation of the Ozone Layer is commemorated annually on 16 September. The 2021 event was held under theme: “Montreal Protocol – keeping us, our food and vaccines cool”.

World Summit on Sustainable Development

At the UN World Summit on Sustainable Development Goals (SDGs) 2030, held in September 2015, world leaders adopted 17 SDGs of the 2030 Agenda for Sustainable Development. Over the next 15 years, with these new goals that universally apply to all, countries would mobilise efforts to end all forms of poverty, fight inequalities and tackle climate change, while ensuring that no one is left behind.

The SDGs build on the success of the Millennium Development Goals and aim to go further to end all forms of poverty. The goals are unique in that they call for action by all countries, poor, rich and middle incom, to promote prosperity while protecting the planet.

UN Conference on Sustainable Development (Rio+20)

Rio+20 refers to the UN Conference on Sustainable Development that took place in Rio de Janeiro, Brazil, in June 2012. The meeting took place 20 years after the landmark 1992 Earth Summit in Rio, when more than 108 Heads of State agreed to work together to develop national strategies to reduce carbon emissions, stabilise GHG, protect forests from destruction, and pay for their share of the damage caused to the Earth through pollution. At the Rio+20 talks, 50 of the 193-member states of the UN launched new energy strategies, and private investors pledged more than US$50 billion to carry out the goal of doubling the share of global renewable energy and the rate of energy efficiency improvement by 2030.