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**sustainable
development**

6.1 WHAT DEMOCRATIC SOUTH AFRICA INHERITED IN 1994

The apartheid government largely ignored issues of sustainability during its time in power, building the country's economy around energy- and resource-intensive sectors, such as mining and agriculture. The era before 1994 was characterised by exclusionary, fragmented environmental legislation and policies that failed to promote sustainable development.

The apartheid government did little to regulate issues like pollution, enforce land rehabilitation or manage limited resources like water in an egalitarian, sustainable fashion. Economic development was pursued at the expense of the environment, with fossil-based sectors shielded from stringent regulation. As a result, democratic South Africa inherited an energy-intensive economy, with most of the country's energy derived from coal-fired power stations. The country's coal deposits present a relatively cheap and reliable source of energy, but coal is carbon-intensive. Consequently, according to the Department of Environmental Affairs, South Africa today is the largest emitter of greenhouse gases on the African continent, and carbon dioxide emission per capita is almost twice the global average. The burning of fossil coal for energy led to high levels of air pollution with health consequences for the poor.

Energy legislation during the apartheid years was largely geared towards regulating the electricity industry. Renewable energy and energy efficiency in energy investments, guaranteeing security of supply and reducing carbon emissions were not priorities.

Before 1994, the mining industry was shielded from environmental regulation and was not required to rehabilitate land after closure. As a result, dust blowing from mine dumps and the toxic residues of open-mine stockpiles are now negatively affecting the health of people in nearby settlements. The Witwatersrand is also at risk from rising acid mine water, which has negative effects on the environment and, potentially, human health. The cost of rehabilitating derelict and ownerless mines, treating acid mine water and dealing with silicon pollution¹ is falling to the democratic government. Environmental legacies of the apartheid government that contribute to a poor state of the quality of the environment have been carried into the democratic order.

The new government in 1994 inherited a country in which the white minority controlled the majority of limited natural resources. Not only had the black majority been confined to 13 percent of South Africa's surface area, placing tremendous strain on the natural resources in those regions, but 98 percent of the country's water resources had been allocated. That left the new government only 2 percent to allocate to the previously marginalised majority. The white-dominated agricultural sector consumed 60 percent of the country's water.

The land that had been allocated to blacks during apartheid was mostly in far-flung areas with limited economic opportunities. Black settlements in urban areas were often near industrial areas that exposed the inhabitants to pollution. Limited access to electricity in these settlements resulted in the burning of fossil fuels (especially poor-quality coal with a high sulphur and ash content), further affecting air quality, while a lack of infrastructure and services like stormwater drains, sewerage systems and waste-removal services contributed to high levels of littering, general environmental degradation and poor human health. Waste was not viewed as a resource and levels of recycling were low. The high pollution levels to which the black community was subjected contributes to the state's heavy health burden today.

In terms of conservation, despite the fact that large tracts of land were under state protection, the seven biomes (fynbos, savannah, grassland, Nama-Karoo, succulent Karoo, desert and forest) were not adequately protected².

Legislation to manage land, air, water and mineral resources was meant to protect narrow minority and government interests in these economic sectors, and environmental policies and services were formulated within a framework that perpetuated social inequality by benefiting the white minority, and generally disregarded the environment and sustainability.

6.2 DEVELOPMENTS SINCE 1994

The democratic government needed to redress past imbalances, address the competing needs for land use, and ensure that economic growth, industrial development, infrastructure development and poverty-reduction objectives could be achieved, while simultaneously ensuring the long-term sustainability of natural systems and the environment. As important as it was to address poverty, unemployment and inequality, this could not be done without also breaking the links between economic activity, environmental degradation and carbon-intensive energy consumption.

6.2.1 Environmental legislation and regulation

The Constitution of South Africa states that all citizens have the right to an environment that is not harmful to their health and wellbeing, and to an environment protected for the benefit of present and future generations, through reasonable legislative and other measures. The past 20 years have seen a dramatic and sustained process of forming environmental guiding principles, institution-building and restructuring, legislation and policy development and domestic and international engagement – all with the intention of addressing the historical legacy of inequality, international isolation and the fragmented structures of environmental governance.

The country's first development policy, the RDP, advocated for a sustainable and environmentally friendly growth and development path. This was followed by the passing of the National Water Act in 1996, the National Environmental Management Act (NEMA) in 1998 and other legislation that provide a legislative framework based on cooperative governance to promote the right to a clean and healthy environment. NEMA has laid the basis for sectoral legislation, policies and strategies.

Government introduced a regulatory framework for environmental impact assessment in 1997 and enhanced it in 2006. Environmental impact assessments require decision-makers to take into account environmental values when planning and implementing projects. This regulatory framework, along with government-developed tools such as environmental management plans and environmental implementation plans, has helped make environmental sustainability a priority across government and society. The last 20 years have witnessed the growth of the profession of environmental impact assessment practitioners, resulting in a new sector of professionals capable of providing independent advice to companies and government undertaking development. To date, environmental impact assessments have yielded mixed results in terms of promoting sustainable development³.

An integrated environmental licensing system has also been developed recently. This is being used to streamline the environmental licensing processes for the infrastructure-building programme and provide a simplified assessment process for small and micro-enterprises, and communities that require support.

A National Framework for Sustainable Development was adopted in 2008 and was followed by the adoption of the National Strategy for Sustainable Development (NSSD) in 2011. It states that, if the country's long-term economic performance is to avoid breaching key ecological thresholds, it should develop new technologies and processes to increase productivity, while using less energy, fewer resources and reducing waste. The framework also asserts that efforts to eradicate poverty could be undermined if scarce resources continue to be used unsustainably. The NSSD and, more recently, the New Growth Path and the NDP, have emphasised the green economy as a key area of growth.

The environmental sector has, over the years, made significant and direct contributions to job creation and poverty alleviation through programmes such as Working for Water, Working on Fire, Working for Wetlands, People and Parks and the Green Fund.



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The law-enforcement capacity of the Department of Environmental Affairs and Water Affairs has been enhanced by the development of capacity in the form of Green and Blue Scorpions. The protection of South Africa's ocean resources has been further enhanced with the purchase of a fleet of environmental vessels since 2006. Another highlight was the enactment of the Integrated Coastal Management Act of 2008, which, among other things, seeks to rationalise the management, protection and development of the country's coastline. In addition, dedicated capacity for addressing wildlife crime was established in 2012, in the form of the National Wildlife Information Management Unit.

Since 1994, government has introduced measures to monitor and track environmental change. The Department of Environmental Affairs produces the State of the Environment Report every five years to track trends in environmental change, while the Department of Water Affairs produces the State of the Rivers Report to track river health, and the Green and Blue Drop Status Report to track the quality of drinking and waste water. Two assessments of the state of the country's biodiversity have also been undertaken in 2004 and 2011.

This monitoring indicates that, while there have been some improvements in some areas, the state of the environment is deteriorating. Moving forward, emphasis will therefore have to be placed on effective implementation and enforcement of the environmental legislation that has been put in place over the last 20 years, as well as proactive initiatives to improve the quality of the environment.

6.2.2 Water resource management

South Africa is a relatively water-scarce country, with limited freshwater resources. Ranked the 30th driest country in the world, its rainfall varies from less than 100 mm per year in the west to more than 1 500 mm per year in the east⁴. Four of South Africa's major river systems are shared with the six neighbouring states of Botswana, Lesotho, Mozambique, Namibia, Swaziland and Zimbabwe. The total area covered by these four shared catchments in South Africa is equal to about 60 percent of the country's surface area and the mean annual flow from these rivers amounts to approximately 40 percent of our total average river flow. In order to regulate

the use of water from these rivers, a number of bilateral and multi-lateral commissions and committees have been established between South Africa and its neighbours.

Strategies have been developed to guide future water resource planning, management and investment requirements, based on an assessment of the country's water balance against projected future needs. The key issues include a greater focus on water conservation and water demand management as every drop counts and the country cannot afford to waste any more water. Other issues include increased utilisation of ground water, the reuse of waste water in both coastal and inland systems, more dams and transfer schemes, desalination, catchment rehabilitation (including the clearing of invasive alien plants) and rainwater harvesting.

There are high levels of water pollution in some regions. According to the State of the Environment Report 2012, there are 223 river ecosystem types that represent the diversity of rivers, of which 57 percent are threatened (25 percent critically endangered, 19 percent endangered and 13 percent vulnerable). Only 35 percent of main rivers and 52 percent of tributaries are in good condition. In response, the Department of Water Affairs initiated an "adopt-a-river" programme, which seeks to raise awareness on the need to care for water resources and also encourage active stakeholder participation (especially those along the river courses) in addressing pollution.

Wetlands constitute about 2.4 percent (2.9 million hectares) of South Africa's surface area and 65 percent of wetland types have been identified as threatened with extinction (48 percent are critically endangered, 12 percent are endangered and 5 percent are vulnerable). Some 291 estuaries (170 000 hectares) are estimated to exist along South Africa's coast, with most located along Indian Ocean waters. Some 82 percent of estuarine ecosystem types are degraded, while 43 percent of estuaries are threatened.

The country experiences water pollution from inadequate, overloaded, ageing or poorly maintained and operated sanitation and waste water treatment systems, inadequate rehabilitation of river systems and inadequate enforcement to prevent industrial pollution. In recent years, a number of new waste water treatment schemes have been completed

and existing ones refurbished. Going forward, improving the capacity, maintenance and operation of waste water treatment systems must be a priority of government.

The deteriorating quality and security of supply of water undermines the ability of government to effectively address inequality and grow the economy. This situation has been further exacerbated by the increasing rate of water consumption due to population growth, industrialisation, urbanisation and greater demand for irrigation and stock water. All this has led to increased water abstraction and reduced water quality, both of which put pressure on South Africa's rivers⁵.

To address this, a broad range of indicators to monitor the quality of surface, coastal and ground water has been developed. Government has developed standards for basic water supply and sanitation that aim to reduce human health issues and environmental degradation. To date, these standards have been implemented to varying degrees.

In some municipalities, there are problems with maintaining and operating infrastructure related to these services. Erosion of management and technical skills at all levels, but in local government in particular, as well as poor use of incentives, disincentives and

regulations to address quality problems, has contributed to deterioration in both the supply and quality of water.

More stringent regulations have been introduced to limit the mining sector's impact on the environment, including streamlining the environmental authorisation process with environmental impact assessment regulations. Enforcement has been enhanced, resulting in an increase in the number of mines monitored for non-compliance from 54 in 2009 to 204 in 2013. However, compliance levels are below 50 percent. The departments of Mineral Resources, Water Affairs and Environmental Affairs have recently introduced integrated enforcement actions and are applying penalties for non-compliance. Since 2011, measures have been put in place to reduce the risks associated with acid mine water in the Witwatersrand, including treatment and alternative-use options for treated water. Moving forward, these measures will need be scaled up as acid mine water remains a risk to water resource management in various areas of the country.

Although South Africa is one of the few countries in the world in which tap water is safe to drink, challenges remain around ensuring equitable access to water and maintaining water quality. Chapter 3 of



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this review discusses how the democratic government has placed particular emphasis on ensuring that all South Africans have access to basic water supply and sanitation services at an affordable cost⁶. Before 1994, government's approach to water provision was "all for some". After 1994, water services were regarded as a non-stop delivery process "from source to utilisation and back to source" and promoted "some for all".

To secure water supply, as discussed in Chapter 5, several bulk water projects were completed between 1994 and 2013, including the Lesotho Highlands Water Project and a network of water-transfer schemes to transport water from areas of relative abundance to those of relative scarcity. These projects aimed to address problems of water shortages in urban areas and dense rural settlements far from large water courses, and to provide water for agriculture and industrial development.

The process of water allocation has been reformed to ensure equitable access and address riparian laws. Going forward, the focus will need to be on implementing the new processes to ensure universal access to this public good.

Water-use efficiency targets for the agriculture sector have been put in place and the Department of Water Affairs is currently completing water management plans for the manufacturing and mining industrial sectors. Management plans to save water have been completed for 14 irrigation schemes, but the department is not yet assessing the percentage of water losses curtailed through the implementation of these management plans. Leakages from domestic water reticulation systems remain one of the main causes of water wastage.

The Department of Water Affairs has made good progress in clearing the backlog



of water-use licences. Applications from agriculture, power generators, municipalities, stream-flow reduction activities, mining, industries, government agencies and developers have been prioritised.

In June 2013, the Department of Water Affairs published the second National Water Resources Strategy, building on the previous strategy that was published in 2004. The goal of the strategy is for water to support economic development and the elimination of poverty, and for water to be managed in a sustainable and equitable manner. The strategy intends to achieve this goal through the use of the Water Allocation Reform Programme and various mechanisms, including setting water aside for redress, compulsory licensing, general authorisations, development support and partnerships, to ensure that water is made available to previously disadvantaged groups.

6.2.3 Air-quality management

Mining and industry, compounded by the burning of poor-quality coal and biomass by those with limited access to electricity, have resulted in high levels of air pollution in some areas. Since 2007, plans to manage air quality and ambient air-quality standards have been developed for identified areas. Some regions, such as the Highveld and Vaal Triangle, have been declared priority areas due to high pollution from burning coal to produce electricity and liquid fuel.

To assess whether air quality is improving or not, the national air-quality indicator was developed, as well as the greenhouse gas emissions inventory for energy- and industrial-process emissions. The focus is currently on reducing burning of solid fuel in residential areas and vehicle emissions. To reduce emissions from transport, lead has been phased out of liquid fuel, and regulations have been introduced to allow for blending.

6.2.4 Energy

Energy production in South Africa remains largely dependent on coal. The Integrated Resource Plan for energy was developed in 2011 to guide future energy investments, guarantee the security of supply and reduce carbon emissions. The plan identified the need to accelerate efforts to tap into the country's solar, wind and hydropower

ENFORCEMENT CASE STUDY 1

There have been some successful prosecutions of those in contravention of air-quality legislation. For example, in November 2010, environmental management inspectors found that Silicon Smelter in eMalahleni was illegally operating several processes without authorisation in terms of the Air Quality Act of 2004 and in contravention of section 28(14) of the National Environmental Management Act of 1998. It was fined R2 million and ordered to implement various measures to ensure legal compliance.

resources, while responsibly exploiting fossil fuels and mineral resources.

As discussed in more detail Chapter 5, to date, 2460MW of renewable energy has been secured through the Renewable Energy Independent Power Producer Procurement Programme. Increased use of nuclear energy, which will drastically reduce emissions, is also being explored. Various demand-side management and energy-efficiency programmes are being implemented in industry and households.

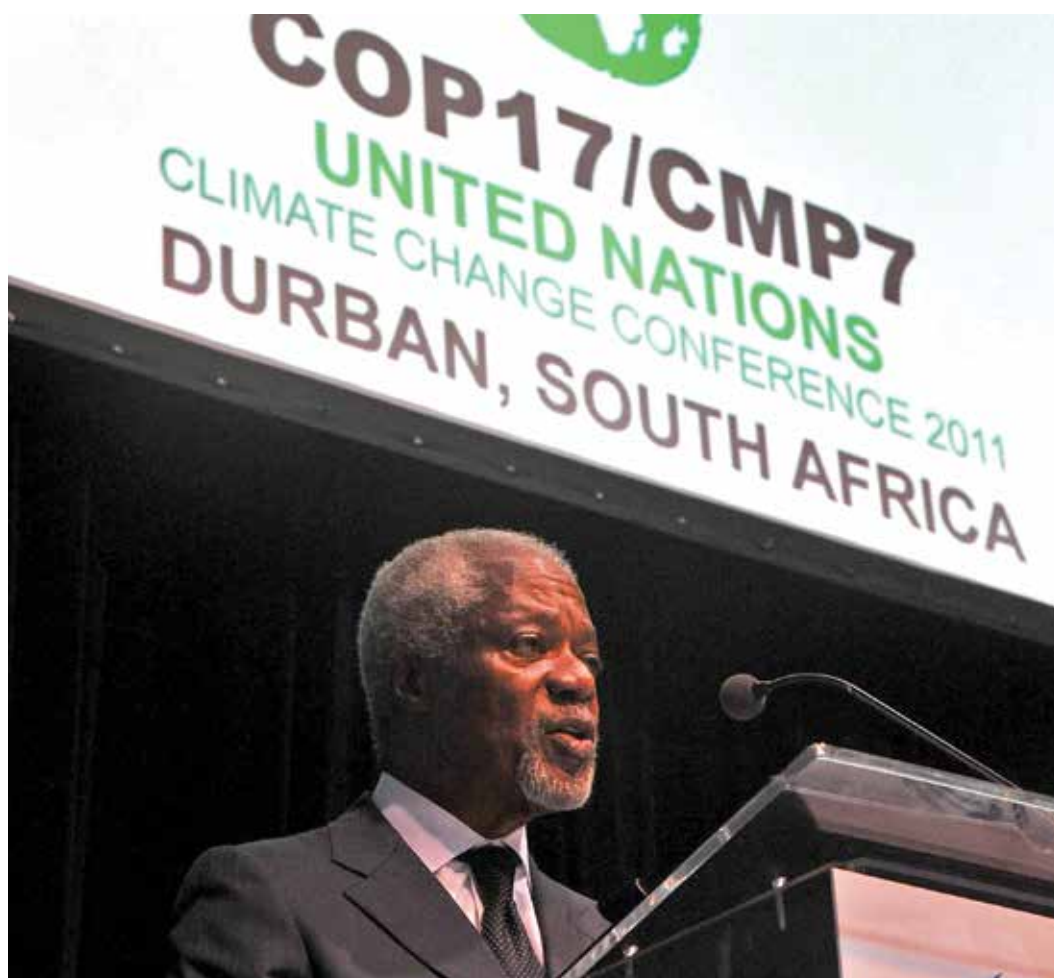
6.2.5 Climate-change mitigation and adaptation

South Africa, like other developing countries, is at particular risk from climate change due to a combination of geography, the intrinsic vulnerability of poor communities to environmental threats, and the pressures that economies based on resource extraction place on the environment. South Africa has acknowledged that climate change poses a major threat and has committed

to strengthening its social and economic resilience to the effects of such change.

In 2008, Cabinet approved the Long-term Mitigation Scenarios to guide policy direction. In 2009, the President announced that South Africa would implement mitigation actions that would collectively result in a 34 percent and a 42 percent reduction in its emissions growth trajectory by 2020 and 2025, respectively. Achieving these targets will require financial, capacity-building, technology development and technology transfer support, and a global, legally binding agreement.

South Africa hosted the 17th session of the Conference of the Parties (COP 17) to the United Nations Framework Convention on Climate Change in 2011 to mobilise support for the Climate Change Programme. The most notable outcome of COP 17 was the Durban Platform for Enhanced Action, which set timelines for negotiating a new climate regime from 2015 onwards.



While preparatory work and research to set targets and measure reductions in emissions in different sectors are under way, implementation programmes include over 300 000 domestic solar water heaters installed to date and the launch of the Renewable Energy Programme.

6.2.6 Conservation and biodiversity

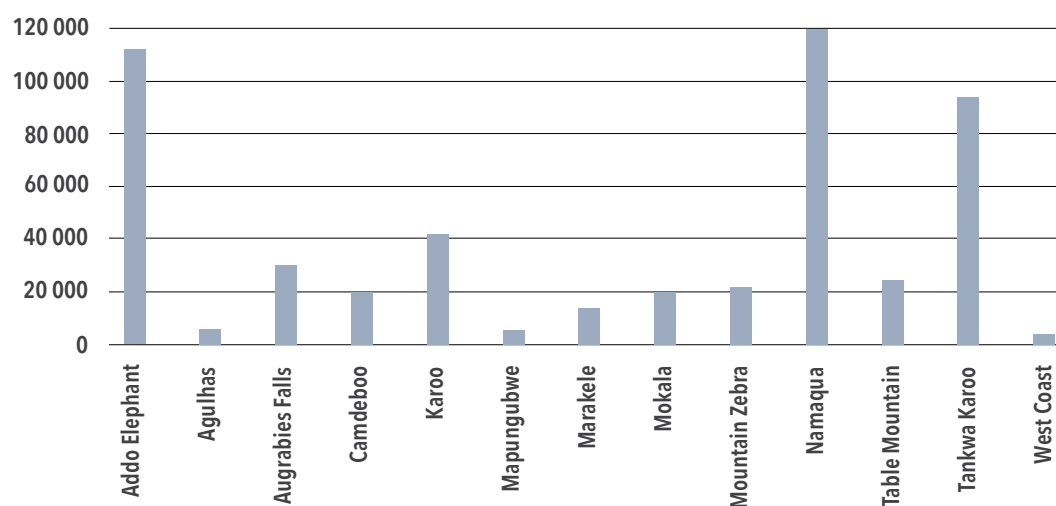
Due to the fact that conservation was used by the apartheid regime to exclude black people from conservation areas, there are conflicts regarding land use and access to resources in some of these areas. Some conservation areas have been the subject of land claims and, in some instances, communities that used to harvest medicinal plants or firewood or hunt animals for subsistence have been at loggerheads with authorities. Community-based conservation areas have been developed and conservation education has sought to attract people to visit parks such as the Kruger National Park. Since 1994, good progress has been made in expanding the terrestrial, freshwater and marine areas under conservation. The conservation estate has increased to 7.9 percent of the total land area, just short of the 10 percent international benchmark for land under conservation. Figure 6.1 indicates the

hectares of land added to the conservation estate since 1994.

South Africa has collaborated with neighbouring countries on conservation and to date, six transfrontier parks have been proclaimed⁸. Eight world heritage sites have also been proclaimed in the country. Management plans for a number of species of special concern and threatened species have been completed and are under implementation. Table 6.1 shows the register of protected areas, including marine protected areas.

Despite these achievements, major ecosystems remain threatened and endangered species, such as abalone and rhinoceros, are being poached at alarming rates. Degradation of natural areas and resources continues, as does the fragmentation of protected or undisturbed areas, with negative effects on biodiversity and ecosystems. To begin addressing this, during the last five years, four biodiversity management plans have been developed to protect the black rhinoceros, cycad, pelargonium and African penguin. There is growing collaboration between government, security authorities, neighbouring countries, international partners and civil society to address rhinoceros poaching, with some successful prosecutions to date.

Figure 6.1: Area added to the terrestrial conservation estate, 1994–2013 (hectares)



Source: Department of Environmental Affairs, 2012⁷



Table 6.1: Protected areas in South Africa according to the Register of Protected Areas

Protected area type	Number	Area (ha)
World heritage sites	8	298 551
Special nature reserves	2	335 000
National parks	22	885 775
Nature reserves	418	2 131 981
Marine protected areas	29	440 269
Mountain catchment areas	16	627 257
Total	495	74 718 835

Source: National Register of Protected Areas, 2012

6.2.7 Waste management

The 1998 Integrated Policy on Waste Management and Pollution advocated waste minimisation, recycling, treatment and disposal. The 2001 Polokwane Declaration on Waste Management⁹ built on this commitment to develop a waste management system that would reduce waste by 50 percent by 2012 and result in zero waste by 2022.

Although these principles inform local and provincial integrated waste management

plans, the targets have not been achieved. Minimum standards for waste collection and disposal have been introduced and the percentage of households with access to at least a basic level of refuse removal increased from 55 percent in 2009 to 72 percent in 2013. The national Department of Environmental Affairs is helping municipalities obtain licences for waste-disposal sites and is intensifying waste reduction, recovery, re-use and recycling initiatives. Notwithstanding these interventions, littering and illegal dumping is common and levels of waste minimisation and recycling are low as waste is generally not considered a resource. The waste sector has the potential to create jobs through waste separation and recycling.

Medical waste has not been adequately managed, with incidences of medical waste pollution reported and cases that have been prosecuted in court. This is an area that still requires specific regulations in terms of the National Environmental Management Waste Act of 2008. Monitoring and enforcing compliance of health-sector waste disposal presents a capacity challenge, as new regulations will require all thermal medical waste treatment facilities to comply with air-quality standards and all existing permits for non-thermal treatment facilities to

ENFORCEMENT CASE STUDY 2

A waste disposal site in Butterworth was investigated by environmental management inspectors and the Eastern Cape Department of Economic Development and Environmental Affairs in 2010. The site was illegally storing healthcare-risk waste. The case was tried in February 2012 and the accused charged with contravening section 20(1) of the Environment Conservation Act (operating a waste disposal site without a licence) and section 35(2) of the Air Quality Act. The company was fined R200 000 and suspended from trading for five years.

be reviewed. An example of successful prosecution for contravening medical waste regulations is given in the box.

6.2.8 Regional and international engagement

Over the past 20 years, the South African government has become an integral part of regional and global multilateral environmental bodies, such as the United Nations Commission on Sustainable Development and the United Nations Framework Convention on Climate Change. It often takes a central role in negotiating key sustainable development mandates in these forums. The United Nations' Millennium Development Goals (MDGs), which South Africa has embraced, seek to ensure that principles of sustainable development are integrated into country policies and programmes. In terms of MDG 7,

which focuses on ensuring environmental sustainability, South Africa has already phased out ozone-depleting substances and is on track to achieve a reduction in carbon dioxide from business as usual by 2020. While there has been an increase in hectares of land under protection, the target to reduce biodiversity loss by 2010 has not yet been achieved¹⁰.

The country has consistently played a strategic role in ensuring that sustainable development remains on the global agenda, earning respect as a major player in international environmental negotiations. South Africa has been influential in negotiating various conventions and protocols and is signatory to a number of them. For example, in 2002 South Africa hosted the World Summit on Sustainable Development in Johannesburg and continues to play an active role in the implementation of outcomes from the Summit through the United Nations Commission on Sustainable Development.

On a regional level, South Africa plays a leading role implementing the NEPAD Action Plan for the Environment Initiative and developing a climate change implementation framework. This includes playing an active role in the Southern African Development Community (SADC) through the African Ministerial Conference on the Environment and the African Ministerial Conference on Water.

6.2.9 Business and civil society

Environmental stewardship has grown in the business sector through, among other initiatives, the development of the King Codes of Good Practice. Launched in 2009, these codes require businesses to provide an integrated report that includes financial results, their social effect on the community in which they operate, and how they intend to increase the positive effects and minimise the negative effects on these communities in future. Most South African companies now report in line with this code.

In addition, South African companies report on their carbon footprint and efforts to minimise and reduce environmental risks through the Global Reporting Initiative. The Carbon Disclosure Project, launched in 2007, assesses the disclosure quality of the top 100 companies listed on the Johannesburg Securities Exchange in their annual reports. On a global level, businesses participate in the World Business Council on Sustainable Development.



Since 1994, civil society has significantly contributed to shaping environmental policy through the Consultative National Environmental Policy process. Through advocacy programmes, these non-government actors have made a significant contribution to shaping government policies and strategies related to sustainable development, particularly in areas of energy security, energy mix and the effects of climate change.

6.3 CONCLUSION AND WAY FORWARD

The general deterioration in the quality of the environment poses risks to economic growth, poverty eradication and reducing inequality. The democratic government has created the policy framework needed for sustainable development. Going forward, the focus will need to be on implementation.

As described in the NDP, future areas of focus in respect of water will need to include the following:

- Reviewing water policy and developing integrated water resource legislation to protect water resources and secure supply
- Addressing a lack of management and technical skills at local municipal level, particularly regarding water wastage and pollution from sanitation systems
- Improving enforcement mechanisms, particularly for industrial pollution and non-compliance with legislation in the mining industry
- Increasing awareness campaigns on the responsible and efficient use of water.

Innovative waste-removal solutions for dense informal settlements need to be found and the country must keep moving towards a zero-waste society. This requires investment in consumer awareness, green product design, recycling infrastructure and waste-to-energy projects. In particular, the challenge of unlicensed landfill sites needs to be addressed.

In order to build stewardship and care for the environment, all sectors of society have to take responsibility for their waste and not pollute the environment. For a cleaner environment, government has to implement the polluter-pays principle through market instruments. Extending producer responsibility in manufacturing and packaging will reduce

the need for more landfill airspace for waste. The carbon tax is one of the tools to curb air pollution and reduce greenhouse gases that cause climate change.

Civil society contributes to shaping policy in areas such as biodiversity conservation, energy and climate change. Greater support should be given to community-based activism in pollution prevention, conservation and natural-resource-management initiatives, while broader biodiversity protection efforts should be accelerated.

The NDP envisages a transition to an environmentally sustainable, climate change-resilient, low-carbon economy and just society. Accordingly solar, wind and hydropower resources need to be utilised to reduce dependency on coal for power, particularly given South Africa's commitment to reducing its carbon emissions to below its anticipated growth trajectory in upcoming decades. The focus on demand-side management of electricity and energy efficiency should continue. As a developing country, South Africa, with its vulnerable water and agriculture sector, should place emphasis on adaptation to climate change, to protect the vulnerable, livelihoods and food security. The NDP indicates that: "Shifting to a green economy, including to a low-carbon economy, is shifting to a more sustainable economic growth and development path in the long term."

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