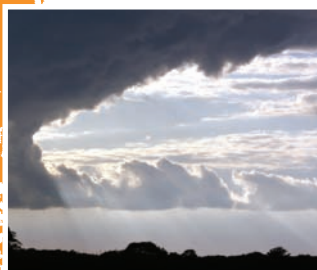


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# South Africa Environment Outlook

A report on the state of the environment



**environment & tourism**

Department:  
Environmental Affairs and Tourism  
REPUBLIC OF SOUTH AFRICA

# South Africa Environment Outlook

A report on the state of the environment

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# South Africa Environment Outlook

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Department:  
Environmental Affairs and Tourism  
REPUBLIC OF SOUTH AFRICA



## MINISTER'S MESSAGE



In September 2002, South Africa hosted the World Summit on Sustainable Development, underlining our commitment towards sustainable development. As people across South Africa are rising to meet the challenge of sustainable development, they are seeking accurate up-to-date information about the state of the environment to help them make better decisions in all aspects of their lives. I am therefore pleased to present the South African National State of the Environment Report, the second in the series. The first report was released in 1999.

This report presents a picture of the condition of the environment and natural resources in South Africa. It discusses the socio-economic factors and external pressures affecting the environment and its management. The report also highlights our vulnerability to an environment that is changing more rapidly than ever before. Based on current trends, the report also provides us with a glimpse of what the future of our environment may look like twenty years from now. The report highlights what South Africa has done to protect and manage the environment and to promote sustainable development.

It is clear from the information contained in this report that the state of our environment will determine the level of our prosperity now and for future generations. Over-exploitation of our natural resources is increasingly leading to environmental degradation and contributing to

reduced ecosystem services. Reduced ecosystem services in turn contribute to poverty. As we strive to address social equity and economic development in the years to come, our ability to improve the state of the environment and secure environmental sustainability will shape our future.

I sincerely hope that this report will inform people about the state of our environment and that the information contained in the report will be put to good use.

A handwritten signature in blue ink that reads "Marthinus van Schalkwyk".

**Marthinus van Schalkwyk**  
Minister of Environmental Affairs and Tourism



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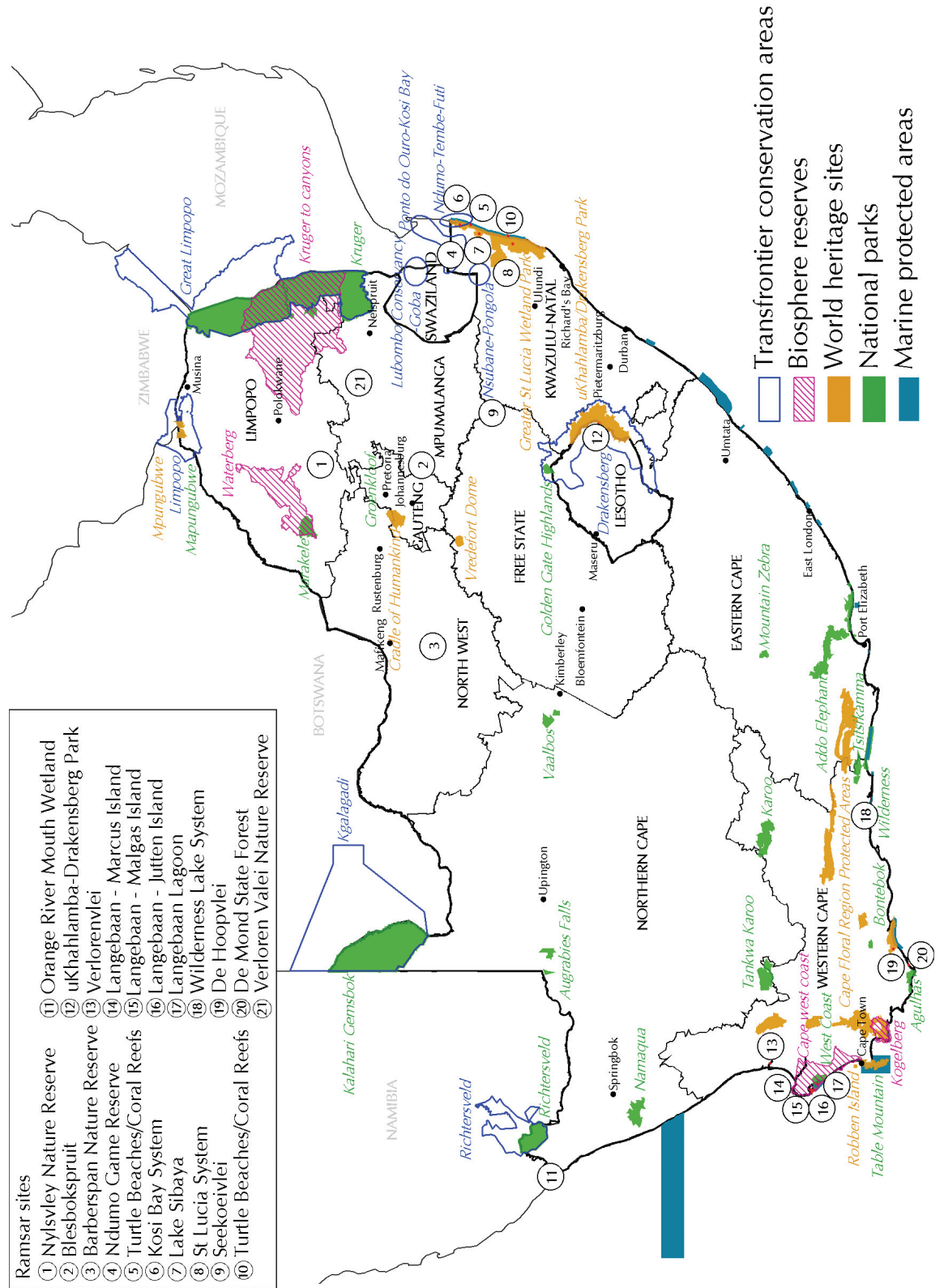
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# MAP OF SOUTH AFRICA SHOWING PROTECTED AREAS



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## ABOUT THIS REPORT

Our environment provides us with a range of goods and services that are essential for human survival, well-being, cultural diversity, and economic prosperity. Human activities are, however, having significant impacts on the environment, ranging from the local to the global scale. For example, growing human populations are consuming resources and discarding wastes at rates that we have not experienced in the past. The ability of the earth to sustain us is therefore diminished by, for example, accelerated rates of deforestation, soil erosion, desertification, and increasing levels of air and water pollution. In other words, the increasing pace of human-induced environmental change is altering the ability of the environment to provide essential goods and services, which in turn impedes progress towards sustainable development.

Recognizing that decision-makers need environmental as well as socio-economic data, the United Nations Conference on Environment and Development held in Rio de Janeiro in 1992 urged nations to issue reports on the environment that would complement traditional fiscal policy statements, budgets, and economic development plans. There was also a call on governments to transform existing information into forms more useful for decision-making, and to target information at different user groups. Furthermore, governments were requested to develop mechanisms for transforming scientific assessments into information suitable for the public. Since the early 1990s, the regular publication of state of the environment reports is one of the mechanisms used to great effect to make environmental data available to both decision-makers and the regular public.

This is South Africa's second official National State of the Environment report. The first direct evidence of state of the environment reporting can be seen in the 1992 National Report to the United Nations Conference on Environment and Development produced by the Council for Scientific and Industrial Research on behalf of the Department of Environmental Affairs and Tourism. The preface of the report stated that "It is, in fact, the first attempt to put together a single coherent picture of the state of the South African environment". Two years later, in 1994, the Department of Environmental Affairs and Tourism published a document called Environment South Africa, which identified major environmental issues and acted as a precursor to the later technical reports on the State of the Environment Report. A draft electronic State of the Environment Report was then released on World Environment Day in 1995, and the first National State of the Environment report was released in October 1999.

State of the environment reporting is now well established in South Africa and several provincial and municipal reports have been published, most of these during the past five years. Other national departments are

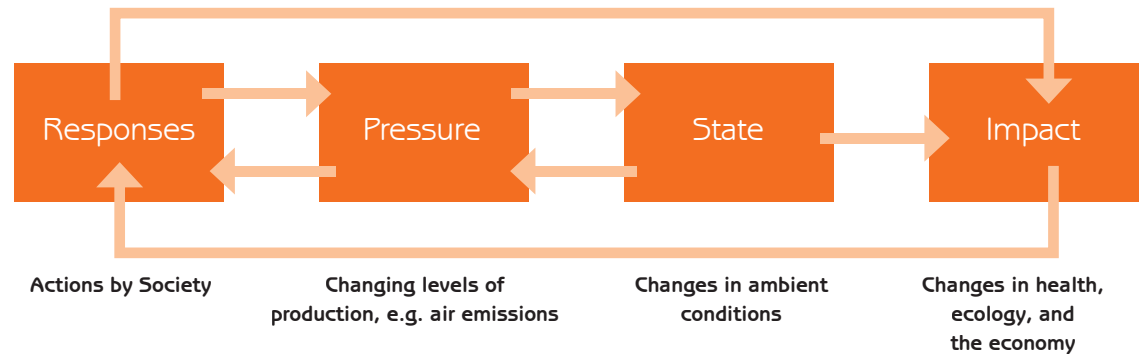
also reporting to South Africans on environmental matters within their respective spheres of interest. For example, the Department of Water Affairs and Forestry has published several reports on the state of river systems and, recently, the Department of Environmental Affairs and Tourism released an interim report on the state of our coast.

In early 2004, the Department of Environmental Affairs and Tourism began planning this second national state of the environment report. As a first step, the 1999 report was evaluated through reviews, user surveys, and informal feedback from various sources. As a result of this evaluation and the outcomes of a national stakeholder consultation workshop held on 18 and 19 November 2004, 16 specialist reports were commissioned. This report is based on these specialist studies, together with information provided by the Department of Environmental Affairs and Tourism and SRK Consulting. Collectively and individually, the authors themselves present an impressive South African resource. They, and other expert contributors who reviewed and improved the drafts, were drawn from universities, private consulting firms, environmental organizations, and statutory bodies. The finished text represents a wealth of individual and institutional expertise and is a testimony of outstanding collaboration among a variety of organizations.

The report is structured as follows. Part I, "Setting the scene" (Chapters 1 and 2), deals with the concepts of environmental sustainability and the current social and economic realities of South Africa, and outlines in broad terms the ways in which different economic sectors impact on the environment. Part II (Chapters 3–9) explores the state of particular environmental components (land resources, biodiversity, inland water, marine and coastal resources, and atmosphere), environmental governance, and human settlements. Part III (Chapter 10) considers the issue of environmental change and human vulnerability by means of case studies. Collectively, these case studies reflect to some extent how vulnerable we are to environmental change. Part IV (Chapter 11) extrapolates from current environmental trends to provide an indication of what the state of the environment in South Africa may look like by 2025. This section was included to facilitate debate around environmental futures, as well as to bring the report more closely in line with regional and global reporting initiatives and approaches. Part V (Chapter 12) discusses various options available to us to improve the condition of the environment in which we live.

## Reporting framework

As was the case in the 1999 State of the Environment Report, this report is based on a modification of the pressure–state–response model for state of the environment reporting developed by the Organisation for Economic Cooperation and Development in the early 1990s, and



Linkages between components of the Pressure–State–Impact–Response framework (modified from California Environmental Protection Agency, 2002)

adapted by the United Nations Commission on Sustainable Development in 1995 to the **Driver–Pressure–State–Impact–Response** (DPSIR) reporting framework for indicators of sustainable development. This latter model, or a variation of it, forms the basis for most state of the environment reports within South Africa and was also the framework used in the 1999 report. The State of the Environment Report has applied the DPSIR reporting framework. Definitions are given in the table on page xv.

## Indicators

Environmental indicators form the basis of state of the environment reporting. Not only do they indicate the current state or condition of the environment, but, if reported upon consistently over time, they indicate trends and thereby allow us to assess the effectiveness of our efforts to deal with environmental pressures.

Reporting on environmental trends in the 1999 state of the environment report was difficult because, at the time, there was no agreed set of environmental indicators that could be used to indicate environmental status and trends. Following a recommendation of the 1999 report, a set of environmental indicators was developed and published in 2002 for use in state of the environment reporting across all major themes. These indicators, as well as several new ones, are reported on in this report. The indicator update was necessitated by recent indicator developments such as the indicators developed to measure progress towards reaching the Millennium Development Goals, indicators in the Johannesburg Plan of Implementation, and other initiatives that followed the release of the national set of environmental indicators.

The aim of this report is to describe environmental issues in a South African context and to provide non-specialist readers with a user-friendly guide to significant environmental trends, the relationships between these trends and human activities, and the current South African response to

environmental deterioration. A conscientious effort has been made in writing and editing this report to avoid bureaucratic jargon. Environmental concepts and technical terms have been explained, as seemed appropriate, in the text, in the footnotes, or in the glossary. Key information is also presented in several hundred figures, maps, text boxes, and tables. Each chapter can be read independently, although cross-references between chapters are provided.

As a summary of the state of the environment in South Africa, this report has limitations. The increasing complexity of environmental challenges and emerging issues requires sound thematic and integrated assessments that produce policy-relevant findings for decision-makers. Relatively few integrated assessments have been conducted in South Africa. Furthermore, there are serious gaps in the environmental data and, together with differences in scientific interpretation, any reader should realize that the analysis published here is not infallible. For many environmental questions of global importance, such as climate change and genetically modified organisms, expert opinion is not always unanimous. As a result, it is difficult to present data and information in a definitive way, or in a way that is accepted by all.

The aim has rather been to help concerned non-specialists to become better-informed participants in the ongoing public process of evaluation and decision-making that will determine future environmental conditions.

The best way to get the ‘big picture’ of the state of the South African environment is to read the Synthesis in this report, as well as the Executive summary and key findings report. The entire report should be seen as a reference work rather than a narrative.

It is now widely accepted that a wide range of people use state of the environment information. The main user groups include: the general public, government decision-makers, and policy analysts at municipal, provincial, and national levels, resource planners and managers, scientists,

## SPIR Reporting Framework Definitions (modified from the African Environment Outlook-2)

Component	Definition
State	<p>'State' refers to the condition of the environment resulting from the pressures outlined below and the effectiveness of responses, for example, air quality in terms of the level of air pollution. 'Trends' are changes in the environmental state over time. A study of environmental trends will reveal whether the state of the environment is improving or worsening. It will also indicate how quickly and what changes are happening (the rate of change) and whether rates of change are increasing or decreasing.</p>
Pressures	<p>'Pressures' are the human activities and processes that act on the environment and cause environmental change. They are often classified into the category of 'root causes', or the category of 'driving forces', such as population growth and industrial expansion, emission levels of pollutants, consumption patterns, or poverty.</p> <p>Pressures can be seen as a sequence of events, each of which have an effect on the state and trends of the issue in question. The pressures on the environment are often considered from a policy and economic perspective as the starting point for tackling environmental issues. Indicators are used to describe pressures, the data for which are often readily available as they are derived from socio-economic databases. Pressures can be grouped into four basic types:</p> <ul style="list-style-type: none"> <li>• Societal developments such as changes in demographics, introduction of new technologies, sectoral activities of the economy, wars, and migrations.</li> <li>• Policies with unforeseen, unintended, and adverse consequences for the environment. In the last 30 years, policies within a broad range of sectors were developed that had negative consequences for the environment (e.g. agricultural policies). These policies are likely to be more specific articulations of the societal development pressures identified above.</li> <li>• Natural processes such as storms and droughts that have devastating consequences for the environment (for example, droughts that exacerbate land degradation).</li> <li>• Environmental policies that exert positive pressure on environmental change.</li> </ul> <p>Some of these types may also act as responses to environmental change. Societal responses can be aimed at both pressures and states.</p>
Impacts	<p>'Impacts' refer to the consequences of the state of the environment for sustainability, specifically relating to humans, the economy, ecosystems, as well as other environmental sectors. For example: high levels of indoor air pollution may result in respiratory tract infections; and land degradation may lead to decreased food production, increased food imports, increased fertilizer use, malnutrition, and siltation of aquatic systems.</p>
Responses	<p>'Responses' are the societal actions taken collectively or individually to ease or prevent negative environmental impacts, or to correct damage or conserve natural resources. Appropriate responses can reduce pressures on the environment whereas a lack of response can be a pressure. Responses may include regulatory action, environmental or research expenditures, public opinion and consumer preferences, changes in management strategies, and the provision of environmental information. There could also be responses to positive changes in the environment. The transfer of species under the CITES agreement from list 1 to list 2 as their status improved due to successful conservation measures would be an example.</p>



secondary and tertiary educational institutions, industry groups, the print and electronic media, and international agencies. Each group has different information needs. For example, while scientists require very detailed information, the general public wants broader assessments of the state of the environment. In order to address these varying needs and increase the readership of this report, the information contained in this report has been issued in various formats, and is presented in the following alternative forms:

- Executive summary and key findings report
- Internet report
- Youth report
- Short issue summaries.

Please visit the Department of Environmental Affairs and Tourism website: <http://www.deat.gov.za> to download these documents as well as this report in full.

## SYNTHESIS

The South Africa Environment Outlook (SAEO) is a detailed analysis of the past, present, and future condition of South Africa's environment. It updates and extends the Department of Environmental Affairs and Tourism's first National State of the Environment Report published in 1999.

Although the SAEO focuses on the natural environment, the underlying theme is the interdependence of the natural environment, human well-being, and the economy. It includes a wealth of information on how the environment affects us, and, in turn, how we affect the environment.

The report aims to:

- provide important information to assist in policy development, planning, and decision-making
- report on the effectiveness of policies and programmes designed to respond to environmental change, including progress toward achieving sustainable development targets
- make recommendations for strengthening policies and programmes
- create an understanding of the relationships between the environment and South Africans
- increase public awareness about environmental and sustainability issues.

The following is a synthesis of the contents of this report.

## Part I: Setting the scene

### Chapter 1: Sustainability in South Africa

International debates on tackling the mounting global environmental issues have raged since the 1970s. The emergence of the concept of sustainable development in the 1980s integrated the environment with development, and the international community increasingly recognizes the interdependence of the environment, society, and the economy. These debates have strongly influenced South Africa's development agenda, and the country has increased its efforts in participating in international and regional initiatives. Distinguished milestones for South Africa include the hosting of the World Summit on Sustainable Development in Johannesburg in 2002 and the central role played by the country in the formulation of the New Partnership for Africa's Development.

Despite this visibility in the international and regional arena, the environment is still at the periphery of socio-economic development. It is viewed and dealt with in the context of an overriding economic and social development agenda.

The well-being of South Africans as well as economic development are heavily reliant on the services that ecosystems supply, such as air, food, water, energy, medicines, recreational, spiritual, and cultural benefits. But measures of environmental sustainability show that the country has exceeded its ecological carrying capacity. The World Wide Fund for Nature's Ecological Footprint for South Africa is 2.8 global hectares per person, compared to the world average of 2.2 hectares per person and the average for Africa of 1.2. This is due mainly to South Africa's large energy footprint through high levels of carbon emissions. Furthermore, the Yale Environmental Sustainability Index perceives South Africa to be experiencing increased pressure on its ecosystems, compounded by weak implementation and enforcement of policy designed to address environmental challenges.

Awareness of these challenges is, however, improving. There is better communication and dissemination of information to stakeholders. The environment is increasingly being kept under review, in line with global trends, through the compilation of local, provincial, and national state of the environment reports. In the context of the push for accelerated growth, to be achieved partly through the Accelerated and Shared Growth Initiative of South Africa, the major challenge is to improve the understanding of the dependence of the economy and human well-being on the sustained provision of ecosystem services. South Africa's National Strategy for Sustainable Development is designed with this in mind.



## Chapter 2: What affects our environment?

The major drivers of environmental change are population growth, economic activities, governance, and levels of technology and innovation. The size and structure of the population influences production and consumption patterns and the manner in which resources are used.

The South African population increased exponentially from 5.17 million people in 1904 to 46.9 million in 2004, with a high average annual growth rate of 3.34% since 1975. This means that there are eight times as many people as there were a century ago trying to survive on the same amount (and in some cases less) of resources such as food, water, shelter, sanitation, clothing, energy, transport, education, and employment.

Along with the growth rate that has decreased since 1995, life expectancy has declined dramatically since 1998, to below 50 years, which is largely attributable to the effects of HIV and AIDS. Despite an emerging middle class, South Africa has experienced a widening of the wealth gap, with more poor people being vulnerable to droughts and floods and hazardous environments.

The macroeconomy has grown steadily since 1994, but it has been characterized as 'jobless' growth, with increasing levels of unemployment. The economy has undergone a transition from a primary economy based on resource extraction to a tertiary one focused on manufacturing and financial services. However, primary sector activities like mining, agriculture, and forestry still contribute substantially to environmental degradation; for example, mining is the largest producer of hazardous and general waste. The larger economy and consequent increase in demand for resources has resulted in unsustainable levels of consumption, particularly of energy (mainly provided by cheap coal and biofuels) and water, and has increased the generation of wastes and pollutants. In addition, the increased demand for land for housing, particularly in the peri-urban areas, has seen the conversion of natural areas to many formal and informal settlements across the country.

South Africa is playing a more important role in regional and international governance and is signatory to many bi- and multilateral agreements. A largely adequate and progressive environmental governance framework has been put in place since 1999, but significant implementation and enforcement challenges still require focused attention.

Technology and innovation are important influences on the environment. Rapid progress in communication and information technology has improved the availability and flow of environmental information, and cleaner production and renewable energy are receiving more attention,

although we are yet to see any tangible benefits in terms of improvement in the state of the environment.

## Part II: State of the environment

### Chapter 3: Environmental governance

South Africa's largely adequate environmental governance framework aims to manage natural resources and ecosystems in a fair and sustainable way. Recent governance efforts have focused on specific issues such as protected areas, biodiversity, and air quality, and on strengthening environmental governance in provincial and local spheres of government and in the private sector.

Since 1999, there has been a steady increase in budget allocations for environmental management within government, although those at local and provincial level remain inadequate. A comprehensive budget reform process is under way for the environmental sector, which includes the development of a medium-term sector plan. The first cycle of environmental management and implementation plans was successfully concluded.

It is encouraging that civil society and the private sector are increasing their participation in environmental management and accountability, and environmental information has been more widely available to the public in the past decade, although public consultation processes still need to be improved. The corporate sector has made substantial progress with the development of a governance code of conduct and the launching of the Social Responsibility Index on the Johannesburg Securities Exchange. However, most companies struggle to report adequately on environmental impacts or performance against environmental targets, and many corporations do so for purely public relations reasons.

These positive steps have not been met with rigorous implementation, compliance, monitoring, or enforcement, particularly at provincial and local government levels. A suite of constraints hinders progress towards sustainable development, most notably insufficient capacity and skills.

### Chapter 4: Land

Cultivation, degradation, and human settlements are the main agents of transformation of land, having converted 18% of the land surface by 2002, with human settlements having increased the most, owing to migration towards the cities and the consequent increases in demand for land, particularly in peri-urban areas. Access to land in these areas remains difficult. Benefits are not adequately accruing to beneficiaries of the land reform programme, mainly because of a lack of financial and technical support post-

handover. Political targets for land reform appear unattainable, given the lack of capacity and funds for supporting beneficiaries. Productivity of land in commercial agricultural areas is increasing despite decreases in the area planted for the major cereal crops of wheat and maize. Population growth, however, is outstripping the increase in productivity, and – considering the increased exports and imports – there is a resulting decline in national food supply per person. Land degradation and desertification continue to affect communal areas of the former homelands most severely, which contributes significantly to exacerbating poverty and declining ecosystem services and biodiversity.

## Chapter 5: Biodiversity and ecosystem health

Positive steps have been taken to protect our biodiversity, but increasing population pressure and consequent land-use change, over-exploitation, invasion by alien invasive plants, land degradation, and the threat of climate change are placing the continued provision of ecosystem services at risk. Too little of our terrestrial (only 6%) and aquatic ecosystems (7% of total river length; 18% of wetlands) are formally protected. Aquatic ecosystems, including wetlands, are in the worst condition of all the ecosystems. Only 26% of rivers are intact, 54% are critically endangered, and more than 50% of wetlands have been destroyed. There is a mixed picture for terrestrial ecosystems, of which 34% are threatened, while despite marine and coastal systems being in acceptable condition overall, some components are worsening. Estuaries are generally in good condition but they are worsening, specifically around urban areas. Significantly reducing the rate of biodiversity loss by 2010 will, therefore, require an unprecedented effort.

## Chapter 6: Inland water

The demands on South Africa's already scarce water resources are increasing and projections are that, by 2025, there will be a national deficit in available water. Already, 10 out of 19 water management areas experience water deficits, with irrigation and water for basic needs in urban areas being the two largest consumers of water. Climate change is expected to increase the variability and intensity of rainfall, as well as increasing it along part of the eastern escarpment and decreasing it in the western parts of the country. Runoff in the western parts of the country may decline by 10% by 2015.

Water quality appears to be variable between catchments and over time. Eight of the 19 catchments have quality restrictions that exceed target quality ranges. Nitrate levels appear to be stable or improving, while salinity levels are deteriorating or stable. These and other

factors have increased pressure on South Africa's aquatic ecosystems, including wetlands. We have severely degraded river ecosystems, and the discharge of untreated effluent continues to grow. The multitude of demands (ecological, domestic, industrial, and agricultural) need to be balanced equitably, and the recently released National Water Resource Strategy is seen by the Department of Water Affairs and Forestry as the main driver for ensuring the balance can be achieved.

According to the Department however, there should be sufficient water of suitable quality to meet South Africa's expectations with respect to maintaining a strong economy, improved social standards, and healthy aquatic ecosystems for the near future – provided that the resources are carefully managed and wisely allocated and utilized in line with the strategy. There is a need for all water-use sectors to focus on the water and waste management hierarchy, which states that minimization at source is the first priority, followed by maximizing reuse or recycling as far as possible, treating to a suitable standard, and disposing or discharging to the environment only if necessary.

## Chapter 7: Marine and coastal resources

Several areas of the marine and coastal system have improved since 1999. Successes include the recovery of pelagic fish resources since the collapse in the 1960s. Several mariculture ventures are working well and there has been an increased awareness and demand for access to non-consumptive uses. This is related partly to improvements in management and protection of the marine and coastal environment, including the extension of marine protected areas, improvement of many of the regulations governing the marine environment, and allocation of long-term fishing rights.

Despite these improvements, there are areas of serious concern. Over-exploitation and misuse of resources remains the major factor affecting the integrity of marine and coastal ecosystems. Widespread uncontrolled coastal development is transforming natural habitat, and there are large increases in the volume of wastewater discharge into estuaries and the sea. Certain fisheries, notably linefish and abalone, show a dramatic decline through over-exploitation, while catch rates of fish have declined since the unsustainable peak in 1960. In addition, climate change is seen as a major threat in the marine and coastal areas, which could adversely affect people's livelihoods.

Efforts are now needed to improve enforcement so as to ensure sustainable use of the marine and coastal environment.

## Chapter 8: Atmosphere

The quality of our air remains one of South Africa's most pressing environmental issues, while climate change is high on the world's agenda. The deteriorating quality of our atmosphere is posing serious threats to people's health. Pollutant concentrations, particularly for sulphur dioxide and particulates, exceed health thresholds in major urban areas across the country, mainly due to emissions from power stations, industrial activities, household fuel burning, and vehicles. Indoor pollutant concentrations in wood- and coal-burning households that have no electricity also frequently exceed health limits.

Owing to the energy intensity of our economy – which is far higher than that of developing countries and similar to that of some developed countries, such as the United Kingdom, for example – South Africa contributes disproportionately to global carbon emissions. Our carbon emissions increased by 9% between 1990 and 1994, and our dependence on fossil fuels for the generation of energy is largely to blame.

The country is also particularly susceptible to the effects of climate change, and its effects on human and natural systems are becoming evident. Prognoses of the outcomes of climate change include a net drying of the western half of the country, a possible increase in rainfall along the eastern escarpment, with a shorter rainfall season possible in the Western Cape. Some of the major impacts of the change and increasing variability of the climate include health issues (including the spread of malaria), changes in the distribution and availability of water resources, changes to biodiversity and ecosystems, and changes in patterns of agriculture.

It is imperative that appropriate mitigation and adaptation strategies are implemented to deal with these critical issues. Improved air quality legislation is now in place and, assuming that its implementation is successful, some improvements in air quality are likely.

## Chapter 9: Human settlements

Urban areas and populations are increasing, which results in overwhelming development challenges. Nearly 58% of South Africa's population now lives in urban areas. Settlements across the country vary in terms of quality of life and the social amenities that they offer. Depending on the type of settlement people live in, they enjoy greater or lesser measures of health, access to schooling, services, housing, employment, and safety. The successes in the delivery of electricity and water to communities contrast with the inadequate access to sanitation, with 50% of the population still not receiving regular waste collection. There is a severe housing backlog in cities, and pressures on transport and energy infrastructure are increasing. In some

areas, settlements are encroaching on high-value agricultural land and scenic locations that have tourism potential. These and other challenges are compounded by severe shortage of capacity and resources, in particular technical engineering skills at the municipal level.

There is need for a more integrated approach to urban and rural development, exploration of strategies in support of improving the implementation of the land reform programme, strengthening local governance, and overcoming the socio-economic and political inequalities in settlements. To this end, it is critical that environmental considerations be incorporated into local planning processes, such as spatial development frameworks and integrated development plans.

## Part III: Human vulnerability to environmental change

### Chapter 10: Human vulnerability to environmental change

In South Africa, the interaction between socio-political circumstances and environmental conditions and change determines the vulnerability of people. The major causes include deepening poverty, unemployment and HIV and AIDS, poor levels of disaster readiness, susceptibility to climate change and variability, and people's inability to cope with extreme weather events including droughts and floods. Household food security is a major concern in the face of climate variability. In addition, a deteriorating state of the environment, poor past land-use planning, and patchy success in the delivery of services such as sanitation and clean water, are increasing the exposure of people to environmental disasters. These include dangers arising from mining areas, contaminated water sources, and houses with high levels of indoor air pollutants.

The most vulnerable people include those who are marginalized, those who lack access to land, capital, literacy, and other assets, and those who are often female, young, sick, or disabled. These groups lack the capacity to cope with environmental stresses. Affluent groups located in unstable locations may also be vulnerable, however.

In the face of a rapidly changing environment, it is crucial for people's capacity to cope with change to be improved. Fostering public participation in decision-making, building social networks, fighting poverty, and reducing HIV and AIDS are integral in addressing the situation. Disaster readiness through improving early warning systems and networks for disseminating information are critical.





## Part IV: Outlook 2005–2025

### Chapter 11: Alternative environmental futures

The 'current future' or business-as-usual outlook for South Africa's environment, based on current trends, looks rather grim. This scene set the context for looking into the future at possible outcomes for the environment. Four qualitative scenarios were constructed based on two axes of

uncertainty: the effectiveness of environmental governance, and the strength of the economy and technology. The four planning scenarios are: Skorokoro, Going Nowhere Slowly, Tata ma Chance, and Laduma!

The Skorokoro future is bleak. Poor governance and economic performance lead to a downward spiral, socially and environmentally. There is widespread non-compliance, increasing socio-economic inequality, economic collapse, all leading eventually to a collapse in ecosystem functioning.

The Tata ma chance future involves a strong focus on economic and industrial growth in a climate of widespread environmental institutional failure. It is characterized by relative short-sightedness, where influential circles of society feel that environmental damage is an acceptable price to pay for a booming economy. The 'quick win' economic growth without consideration for sustainability deepens socio-economic inequality and begins to slow down because of its dependence on environmental resources. Ultimately, the economy suffers and the future moves towards Skorokoro.

The Going Nowhere Slowly future is one in which economic growth falters, but there is a strong commitment to effective governance systems. Consequently, ecosystem services and improved service delivery are maintained in the short term. They decline thereafter, however, as the skills and resource base stagnates and dependence on donor and aid funding increases.

The Laduma! future is one in which people, the economy, and the environment move together in a sustainable direction. Sustainable development rather than pure economic growth is the basis of economic policy, where full cost accounting becomes the norm. There is technological innovation, strong international relations, and self-regulation.

#### ENVIRONMENTAL IMPLICATIONS OF THE TATA MA CHANCE FUTURE

- Human vulnerability declines initially along with increased human development and economic growth. This situation reverses when exploitation of the environment causes widespread degradation
- Misuse and exploitation of environmental resources by multinationals leads to increased land contamination and clearing of natural habitat
- Water quality and availability declines rapidly, marine and coastal resources become depleted, and atmospheric emissions increase, eventually causing an increase in respiratory diseases.

#### ENVIRONMENTAL IMPLICATIONS OF THE LADUMA! FUTURE

- Human vulnerability improves initially along with increased human development and economic growth
- Land resources are protected and poor areas rehabilitated, while the status of biodiversity persists and no further loss occurs
- Integrity of water and air is maintained, and marine and coastal resources improve.

#### ENVIRONMENTAL IMPLICATIONS OF THE SKOROKORO FUTURE

- Human vulnerability increases as human development and the economy decline
- Exploitation of environmental resources for survival lead to increased land degradation and loss of biodiversity
- Rates of deterioration of water and marine and coastal resources, and of air quality slow initially, but decline gradually thereafter
- Ecosystem services eventually collapse.

#### ENVIRONMENTAL IMPLICATIONS OF THE GOING NOWHERE SLOWLY FUTURE

- Human vulnerability improves, initially, along with human development through purposeful state intervention. This situation reverses when economic growth declines
- Land condition is maintained temporarily but over-exploitation of natural resources causes widespread land degradation and loss of biodiversity
- Integrity of water and marine and coastal resources, and of air quality is checked initially but declines gradually thereafter.

## Part V: Options for action

### Chapter 12: Options for action

Despite a largely adequate and progressive framework for environmental governance having been developed since 1994, the overall condition of the environment is deteriorating. This should be seen in the context of the overwhelming development needs of our country, and the dependence of our society and economy on natural resources and ecosystems. Considering this, and the increasing vulnerability of communities to environmental change (particularly climate change), doing business as usual is not a viable option – concrete action needs to take place in order to move towards the Laduma! scenario. This chapter details the major cross-cutting options for action,



cross-cutting issues in the report, and options for action for tackling specific environmental issues. The four cross-cutting priority options for action are as follows:

- **Strengthening implementation and enforcement:** the solid framework for governance remains a mere intention unless it is implemented and enforced. While some successes are evident (for pelagic fisheries, for example), there are still many challenges faced with the implementation of strategy, policy, and legislation in South Africa.
- **Mainstreaming the environment:** continued focus on mainstreaming the environment and biodiversity considerations into all aspects of human behaviour is required. The National Strategy for Sustainable Development aims to ensure that the environmental pillar of sustainability is addressed sufficiently. Natural resource accounts need to be incorporated into national accounting systems and to be updated regularly.
- **Building capacity:** there is a critical lack of capacity in the implementation arms of government, particularly at local government level. An environmental capacity-building programme for local government should be rolled out nationally. Too much emphasis on relying on state governance is risky, however, given the capacity constraints. It is therefore equally important to capacitate civil society and the private sector, so as to improve participation in planning for environmental sustainability.
- **Environmental information for decision-making:** there is much work to be done to ensure that there is appropriate and reliable data and information for decision-making. An integrated approach to collecting, managing, sharing, and reporting on environmental and other data involving all relevant government departments and research institutions is urgently required. There is also a need to improve the translation of science and research into practical policy for decision-making, and for raising the awareness of the public. State of the environment reports have an important role to play.