



**Western Cape
Government**

BETTER TOGETHER.

State of Environment Outlook Report for the Western Cape Province

EXECUTIVE SUMMARY

2013



FOREWORD

Foreword by the Minister of Local Government, Environmental Affairs and Development Planning.

It has often been said about the Western Cape that our gold is above the ground and not below the ground such as in other provinces. Our gold in the Western Cape is our biodiversity, natural beauty and way of life. Our lifestyles and the choices we make affect the environment in which we live. Thus without having a realistic picture of the condition of the environment we will not be able to make the right management choices. For this reason the Western Cape Government embarked on a project to research and compile a Western Cape State of Environment Outlook Report. The environment is a cross-cutting issue and the purpose of this State of Environment Outlook Report is to provide information on environmental trends so that politicians, officials, researchers and managers can take decisions that affect the environment based on credible information. It is also able to create awareness among the general public on the condition of the environment.

This report indicates that although we are ahead of many other Provinces in our service delivery, this has been achieved at the cost of our natural resources. This is an indication that in the future we will not be able to afford the resource intensive municipal services and infrastructure we have today – we must therefore build smarter settlements.

We recognise the need to portray an accurate picture, but as is evident from the report findings, we will have to take more wise decisions and change our lifestyles to safeguard our environment if we want to ensure clean and healthy ecosystems for our children and future generations.



Provincial Minister,
Anton Bredell



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1 STATE OF ENVIRONMENT REPORTING IN THE WESTERN CAPE

The Western Cape is blessed with natural beauty that includes the unique fynbos vegetation, mountain ranges and beautiful shorelines, and also possesses a cultural diversity with a long and rich history. The province's natural capital is impacted by a range of factors, including the need for economic development and social welfare, as well as global climatic change. To enable decision-making that will balance the needs of the human and natural systems and achieve a sustainable future, regular environmental assessment in the form of 'state of the environment' reporting is required.

State of Environment Reporting

A State of Environment Report is used to highlight changes in the environment, as well as the causes of these changes, and to identify appropriate responses.

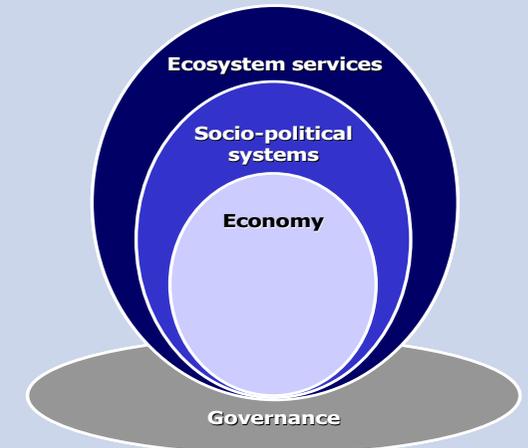
SoE reporting is not an end in itself. It is part of a broader process aimed at achieving sustainable resource management, through providing accurate and relevant information to the correct target audience, and influencing decisions through effective communication.

Source: DEAT, 2006

What is Sustainable Development?

The 2013 Western Cape State of Environment Outlook Report adopts a systems approach to sustainability where the economic system, socio-political system and ecosystem are seen as embedded within each other, and then integrated through a governance system that holds all the other systems together within a legitimate regulatory framework. Sustainability implies the continuous and mutually compatible integration of these systems over time; sustainable development means making sure that these systems remain mutually compatible as the key development challenges are met through specific actions and interventions to eradicate poverty and severe inequalities.

Source: National Framework on Sustainable Development (NFSD) 2008



South Africa has produced a range of State of Environment products, including three national reports (1999, 2006, 2012). This 2013 report is the second comprehensive report on environmental trends in the Western Cape, following on from the "Western Cape State of Environment Report – Year One" baseline report (DEADP 2005). The aim of the 2013 report is to detail the current state of environmental resources and identify environmental trends and priority concerns. It must therefore be seen as a critical supportive process for the provincial visioning exercise which is being undertaken under the name 'OneCape 2040'. OneCape 2040's vision is to enhance the sustainability of the regional economy by rising to the

challenge of creating: "...a resilient, inclusive and competitive Western Cape with high rates of employment, growing incomes, greater equality and an improved quality of life for all our citizens and residents that addresses the crisis of joblessness, overcomes our legacy of skills and asset deficits and responds to environmental risk." The vision acknowledges the need for a sustainable balance between economic access, cultural diversity, human activities and, importantly, sustained integrity of the delicate ecological system that the Western Cape is custodian of.

2 THE FRAMEWORK FOR THE STATE OF ENVIRONMENT OUTLOOK REPORT

2.1 The Drivers-Pressures-State-Impact-Response framework

As in the 2005 report, the 2013 Western Cape State of Environment Outlook Report reports on the state of the environment specifically for the Western Cape based on the internationally accepted 'Drivers-Pressures-State-Impact-Response' (DPSIR) framework (Figure 1). The framework acts as an effective way to provide a 'big picture' snapshot of the state of the environment. Adopted by the United Nations, this framework considers causal links, with feedback at the end of the cycle to revisit and reset the start point.

- **'Drivers'** are the primary agents driving change in the environment (e.g. human population).
- **'Pressures'** are the human activities and processes that act on the environment and cause environmental change (e.g. agricultural production).

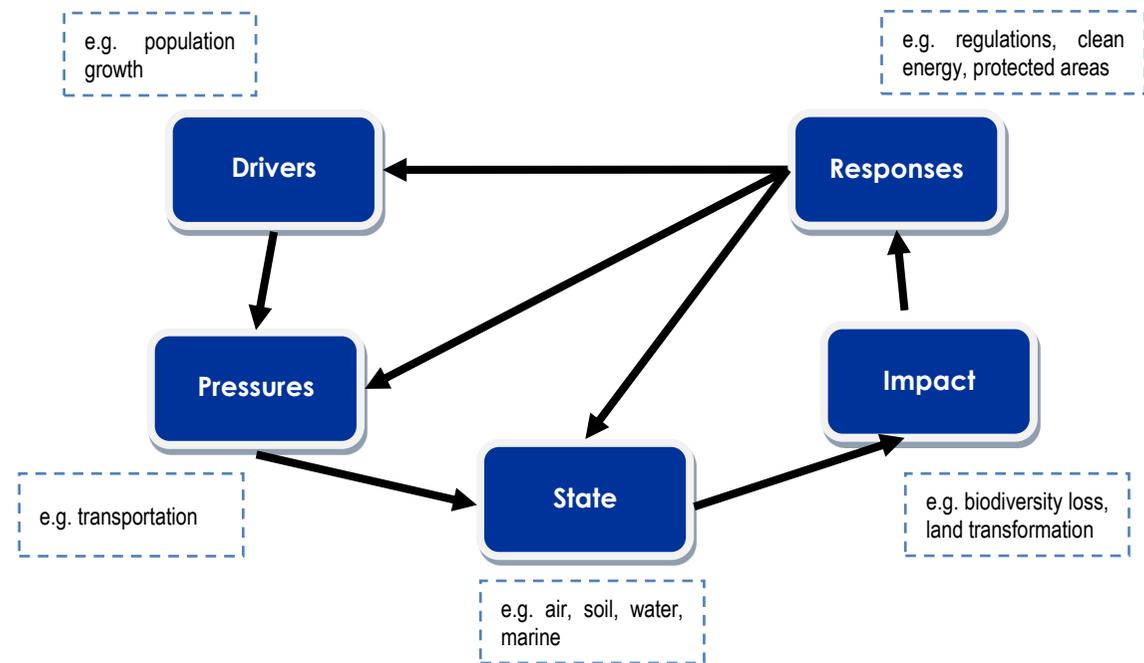


Figure 1: Interpretation of the DPSIR Framework

- **'State'** describes the current condition of the environment which changes over time (e.g. extent of cultivation).
- **'Impacts'** describe the consequences of changes (positive / negative) to the environmental state from a sustainability viewpoint – considering effects to humans, the economy, ecosystems, other environmental sectors, and could include regional or global effects (e.g. fragmentation of natural habitat).
- **'Responses'** are actions (corrective or survival responses) taken to influence drivers and pressures, or to change the state, including easing or preventing negative environmental impacts, correcting damage, or conserving natural resources (e.g. improved monitoring and compliance within extension services). Societal responses act as inputs to all components of the framework.

2.2 Themes and indicators

In order to consider the state of the environment as a whole, yet its constituent systems individually, reporting is done according to a number of summarising themes. This report follows a similar structure to the 2005 report, reflecting on themes related to natural, social and economic aspects of sustainable development. Notably, the number of themes was reduced

from fourteen to nine to allow for standardisation across the various levels of State of Environment Reports within South Africa and to reduce overlap between environmental reporting and socio-economic reporting as found in the economic and social outlook reports for the Province (Table 1). This Executive Summary reports on the key findings of each theme, whilst the detailed individual theme chapters are available as electronic publications.

Within each theme, issues are identified that are representative of the overall state or health of that theme. Each issue is then measured according to quantifiable indicators that will show change to that facet of the environment. Indicators are the key to any environmental reporting as they allow for a baseline to be set against which change can be tracked over time. The selection of indicators for the 2013 State of Environment Outlook Report was informed by the indicators in the 2005 report and similar documents, and by consultation with key stakeholders, so as to meet both current and expected future uses of this tool.

2005 Themes	2013 Themes
Air Quality and climate change	Air Quality Climate Change
Biodiversity	Biodiversity and Ecosystem Health
Inland Water and Water Supply	Inland Water
Coastal Zone	Oceans and Coasts
Land	Land
Waste and Sanitation	Waste Management
Energy	Energy
Health	Human Settlements
Education	
Economics and Poverty	
Tourism	
Urban Development	
Transport	
Safety and Security	

Table 1: Themes and indicators for the 2013 Western Cape State of Environment Outlook Report

3 DRIVERS OF CHANGE IN THE WESTERN CAPE

Change in environmental parameters is driven at a primary level by population growth and dynamics, consumer behaviour, and in some cases changing natural conditions. However, it is predominantly human actions, including economic activities, transportation, energy production and use, water use, etc., that put pressure on environmental aspects.

The link between pressures on the environment and changes in the environment is not a direct correlation. Instead, the efficiency of resource use and amount of residual waste disposed of in the environment should be considered as the determinants of change.

3.1 Population dynamics

The Western Cape, and in particular the City of Cape Town region, attracts people from other provinces and countries due to a widespread perception of higher standards of living, better employment opportunities and a quality living environment. The result is significant population growth, nett in-migration and an increase in the number of households. At the same time, there is a

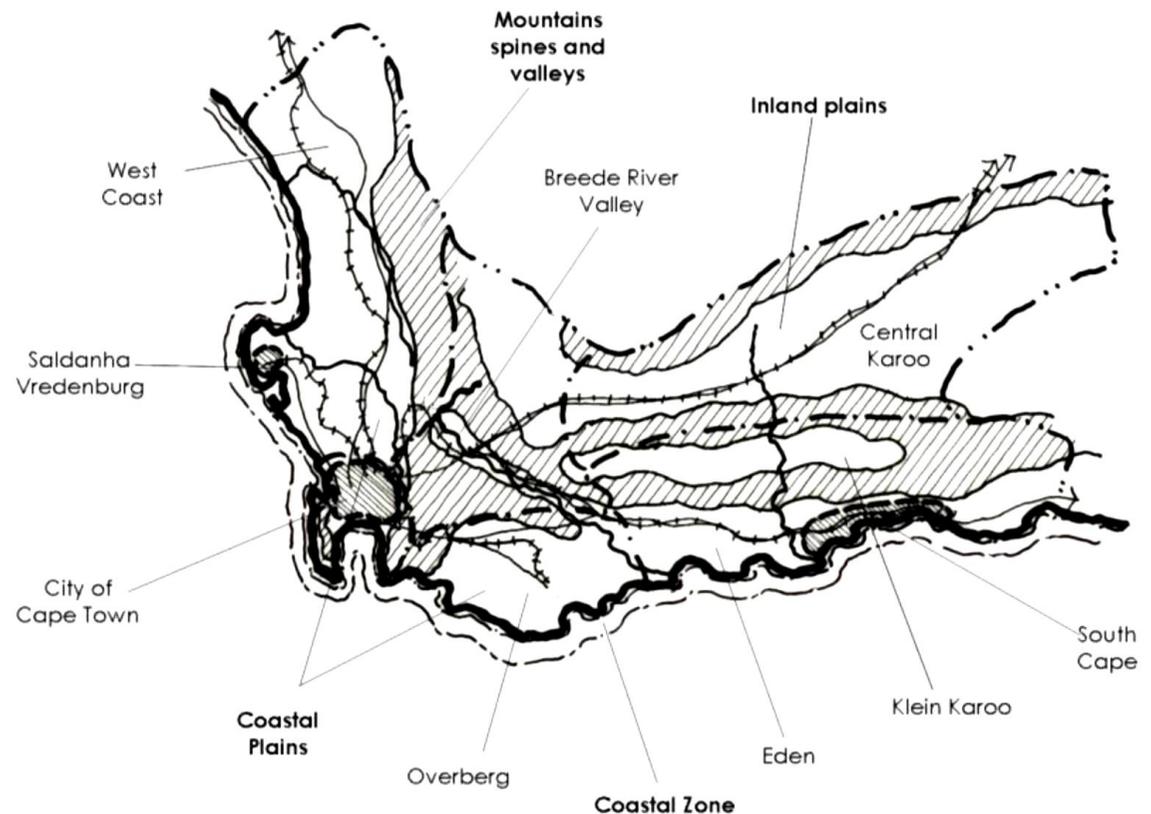


Figure 2: Main regions of the Western Cape (WCG 2009)

noticeable shift towards urbanization from rural areas. According to the Provincial Spatial Development Framework (WCG 2009), 90% of the province is already urbanized, which has implications for planning, service provision and resource consumption.

The increasing population places strain on the resources, specifically in terms of the provision of municipal services, the creation of employment opportunities and increased housing demand. As a result there is an increasing need for increased disaster management planning, food security and household level socio-economic resilience.

3.2 Economic activities & infrastructure

The Western Cape is an integral part of the South African economy. It is a major agricultural export area, centre of the country's fisheries industry and the most valuable international tourism destination in Southern Africa. In addition it is a key logistics node with two major ports as well as being a major source of professional, business and educational services for the national economy.

In 2012, the Western Cape is estimated to have achieved economic growth of 3%, which is marginally higher than the 2.4% achieved nationally. This growth is driven by the secondary and tertiary sectors, namely finance, real estate and business services sector and the wholesale and retail trade, catering and accommodation sector. Primary sectors are not doing very well, with shrinking Gross Domestic Product (GDP) contributions and employment figures. Most job creation takes place in the City of Cape Town and Eden District, however, unemployment is a concern as there are 573 000 unemployed people in the province, most of whom are between the ages of 15 and 34.

Growth potential among the towns of the Western Cape differs markedly. Based on the Growth Potential of Towns Study (WCG 2010), only 6 towns outside of the City of Cape Town are considered to have very high development potential. These are George, Oudtshoorn, Paarl, Stellenbosch, Vredenburg and Worcester. On the other end of the scale, 12 towns are identified as struggling, and as having little in the way of development prospects.



Agriculture contributes only about 4% to the economy of the Western Cape (WCG 2012), but is a crucial employment generator that focuses on rural areas and low or semi-skilled workers. Continued vibrancy in agriculture is

therefore a critical requirement for rural economic development, but this could impact on the ecological sustainability of the natural resource base if agricultural areas expand and agricultural practices intensify. The integrity of natural resources is of critical importance to tourism, as most of the tourism in the Western Cape is nature-based and built on a foundation of a high-quality and unique natural environment.

Transportation is considered to be a fundamental requirement for economic activities and growth. The Western Cape has an extensive transportation system that consists of an extended road network, long distance and metropolitan rail systems, international and regional airports, and two major ports. Although this offers a range of different transportation options, a number of structural deficiencies exist (DTPW 2010):

- The transportation network allows for diverse modes of public transport, yet in rural Districts up to 77% of people walk, cycle, hitchhike or use donkey-carts to get to their destinations.
- Public transport faces obstacles such as poor coverage in rural areas, over-reliance on government subsidies, long lead times for service roll-out and poorly maintained infrastructure.
- Rail commuters increase by 20% per year, but current infrastructure

maintenance and expansion as well as rolling provision are not keeping pace.

- The Western Cape is reliant on long distance connections for land, air or sea based movement of people and goods, whether national and international, which adds to the costs of transportation and the province's carbon footprint.

In 2009, transportation was responsible for 52% of the energy consumption in the province. This has rapidly escalated from 35% in 2004. Industry consumes a further 34% of the energy (down from 49% in 2004), whereas the built environment consumes 13%. When considered in terms of the energy carriers preferred by each of these sectors, it becomes clear that the province's carbon footprint is strongly driven by the reliance on coal-derived electricity, the burning of coal in industrial applications and the consumption of liquid fuels (WCG 2013).

Economic growth, in conjunction with population growth, has placed demands on existing infrastructure that can only be satisfied through pro-active maintenance and expansion. This applies throughout the different infrastructure networks, including water provision, sanitation systems, transportation, energy supplies and information communication (DTPW 2013).

The Western Cape Infrastructure Framework (2013) notes the following anticipated increases in demand:

- Water demand is expected to increase by 0.6% per annum.
- Wastewater generation will increase faster than the rate of water demand.
- Energy demand will grow at 3% per annum, with electricity specifically growing at 2.2%.
- Motorised trips will increase by 2.8% per annum.
- Housing demand is currently at over 400 000 units, and can be expected to grow along with the population size.
- Waste collection volumes are expected to increase from 5.5 million tons per annum to 8 million tons per annum by 2040.
- A Provincial target of universal access to broadband infrastructure by 2020 has been set.

3.3 Efficiency of resource use

In the face of a growing population and growing demand for consumer goods, the efficiency of resource use becomes the key to sustainable development. Major improvements are required in terms of the value that is derived from resource units

consumed in the economy, since several indicators show that current trends are either compromising the long term existence of natural resources or depleting the basic building blocks for economic development.

One of the critical inefficiencies in the province is the use and consumption of energy. Per capita energy use is high, and so is energy intensity per million rand GDP generated. Comparing the Western Cape figures to those of the country is hard, as national energy use and emissions information is outdated.

Land, in the form of suitable space for different land uses, is a natural resource that must be shared equitably between the different spheres of society and the economy in a way that does not compromise our natural assets. Currently, rapid urbanisation means that urban infrastructure and structures are supplanting natural open space, which leads to loss of biodiversity and habitats, as well as fragmentation of continuous areas of natural vegetation, ridges, water courses and wetlands. This compromises ecosystem integrity and results in areas of high natural productivity being lost along with their potential for natural ecosystem function or agricultural production. A balanced approach to land transformation and use is required in order to protect overall

economic functioning and social resilience. This could, for example, include an active protection of urban agricultural practices that contribute to social sustainability in marginalised communities.

Conservation of critical biodiversity areas in the form of natural open spaces will ensure that biodiversity is preserved as a resource for both urban and rural communities. Biodiversity contributes to the provision of ecological goods and services such as the prevention of erosion, purification of air and water, flood attenuation, and the storage of carbon to counteract global warming. Different flora and fauna species are also used for medicine or consumed as food or fuel. A loss in biodiversity will compromise the integrity of natural systems, and specifically impact on sections of society that are vulnerable to environmental or economic changes (e.g. flooding, fisheries collapse etc.).

The concern over natural resources and biodiversity extends to both marine and freshwater systems. Oceans and coasts sustain several sectors of the Western Cape economy, and currently, large areas along the West Coast and off the Eden coastline are considered to be endangered or critically endangered as a result of pollution, overexploitation or general disturbance. Surface water resources in the province are

also oversubscribed. Although available water resources have increased through catchment management actions, the allocation of water for different uses, predominantly agricultural practices, still exceeds supply. Only the Breede River Water Management Area has a positive water balance, but this is less than the total negative water balance of the rest of the province's river systems.



3.4 Disposal of waste

A growing population and increasing concentration of humans in urban contexts inevitably lead to the accumulation of waste products in the environment. Currently, much of the waste generated in the Western Cape ends up in solid waste disposal facilities (landfills) while the remainder is not

controlled, and these waste products enter the air, water, land or marine environments.

Waste accumulation leads to a reduction in the quality and natural functioning of air, water and land systems, and therefore also compromises human health and productivity.

Typically, the worst contamination would take place around industrial activities or in settlements with reduced access to basic services, which is often also where the highest incidence of contact between people and waste-related pollution is likely. Proper waste management is therefore an important component of overall environmental management and sustainable development from both biophysical and social perspectives.

4 ENVIRONMENTAL THEMES

The environmental system in the Western Cape might be unique in terms of composition, but nevertheless represents just a small component of the global earth system. It forms part of all the major hydrological, atmospheric and nutrient cycles, and is inextricably related to its neighbouring provinces, the rest of the country, as well as regional oceanic and atmospheric circulations.

Impacts such as climate change, biodiversity loss, consumption of fresh water, change in land uses and air pollution have global implications. Reaching 'tipping points', or triggers, for cascading systematic adjustments within the Earth's natural systems will necessitate drastic changes to our current way of life.

Figure 3 shows a way of thinking about sustainability that takes our planet's finite resources into consideration. The earth's natural systems' processing capacity forms the 'environmental ceiling' within the bounds of which human activities must operate. At the same time, we strive to meet our basic human needs or 'social foundation' to ensure quality of life to all. Sustainability is about finding a way to remain within the

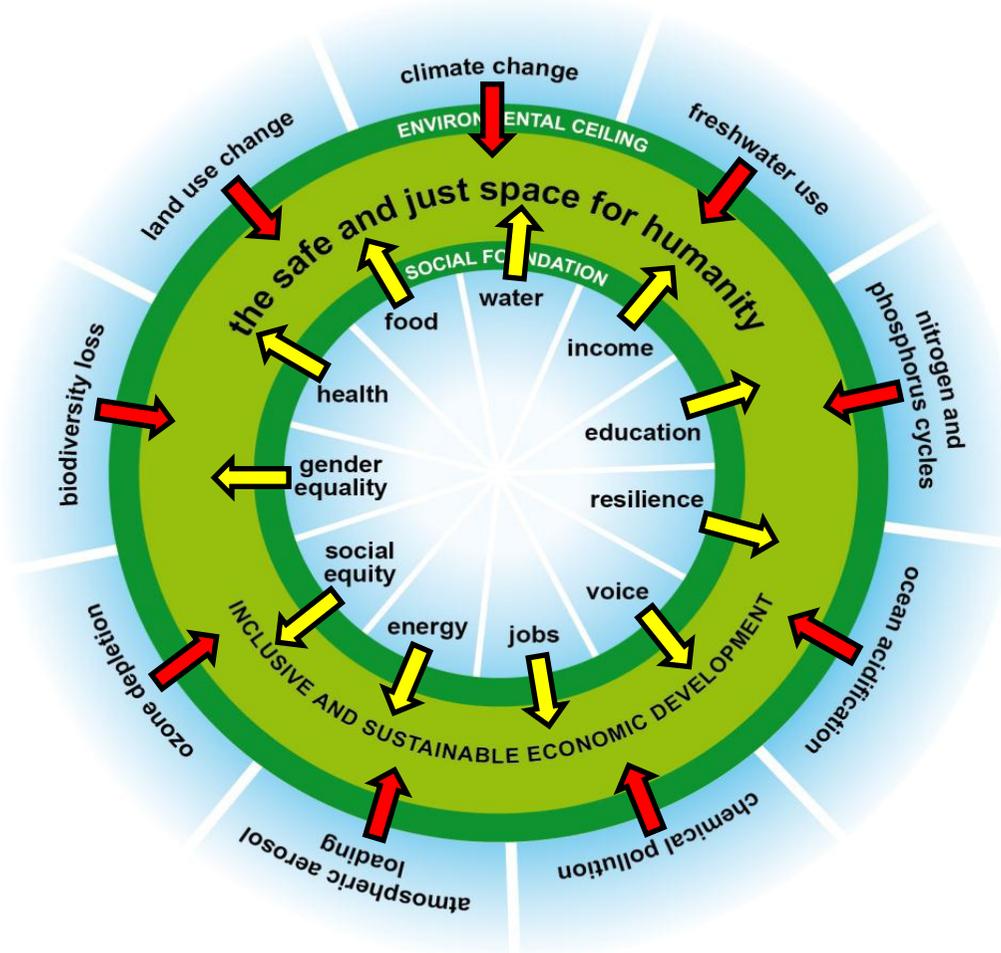


Figure 3: Envisioning a space for humanity (Adapted from Raworth, 2012)

environmental ceiling whilst meeting our social foundation requirements.

The following sections describe the state of each of the environmental themes reported

on. The status of the different themes should be regarded as a measure of how well we are doing in terms of keeping our human activities within the bounds of the 'safe and just space' of sustainability.

4.1 Land

OUTLOOK: DECLINING

Land is a critical resource for mining, agriculture, urban development and transportation, and fundamental to the 'sense of place' of the province. The loss of land for agriculture, land degradation, habitat fragmentation and the loss of ecological services all impact on the sustainability of the province, and impact on food security, poverty and livelihoods. Land is therefore the context for much of the State of Environment Outlook.

The Western Cape forms 10.6% of the country's total land area and has a highly urbanised population (>90%). A growing population, increasing number of households, and decreasing household sizes all contribute to the pressure on land resources. Cape Town experiences the most urbanisation pressure, followed by the Eden, Overberg, and Saldanha Bay areas.

As in the rest of the country, historical dispossession and forced removal of people prior to 1994 have resulted in large inequities in access to land and resources as well as insecurity of tenure for a large proportion of the population, particularly in agricultural and rural areas.

Most of the province remains classified as natural, with development taking place along the coastline and in the agricultural lowlands (Figure 4). Urban functions are concentrated in and around the City of

it is perceived as having a high quality of living, causing high levels of in-migration, especially from the Eastern and Northern Cape. Valuable land that should be used for agriculture and protection of ecological

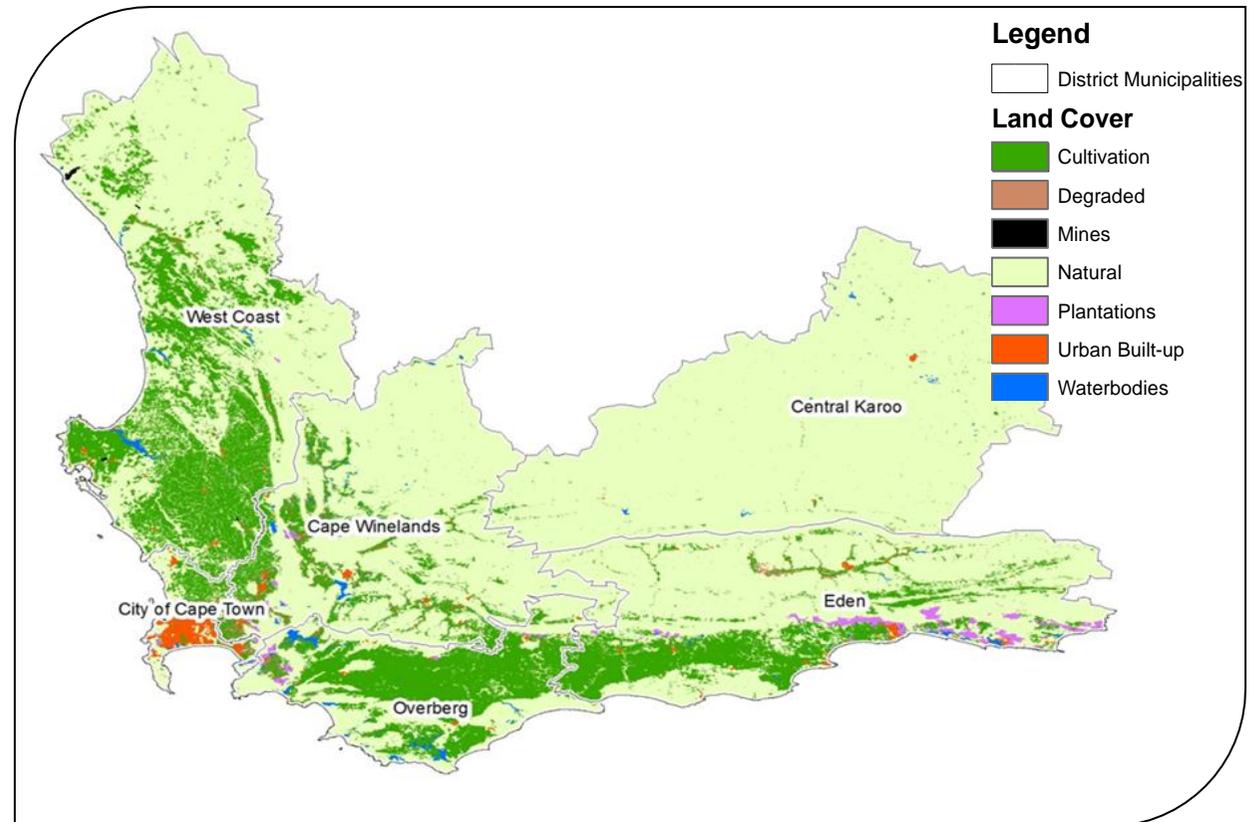


Figure 4: Summarised land cover for the Western Cape

Cape Town, Cape Winelands and Mossel Bay. Forestry is found in Eden, the Overberg, and to a lesser extent in the Cape Winelands. Cape Town is a major draw card, not only as a tourist destination but also since

processes is consequently being fragmented and transformed in order to accommodate the growth.

Land transformation is largely driven by urban expansion, agricultural activities and degradation through poor land practices such as over-grazing. However, information on land transformation was found to be inadequate for definitive conclusions about the rate or impacts of transformation. Therefore, it is difficult to say if planning and decision-making around land-use has been positive, and that the resource is being used in the most effective manner. Although the predominant land cover in the province remains 'natural' (78%), agricultural cultivation has expanded since the previous report (now covers 19%), with urban uses constituting around 1%.

Agricultural land uses include cultivated areas, grazing and forestry plantations. The sector contributes to 55-60% of South Africa's agricultural exports, supporting almost 10 000 farms and employing a quarter of a million people. Commercial agriculture forms the greatest component of the agricultural land use with 43% used for animal production and 36% for croplands. Forestry accounts for a small portion of the provincial economic land use. Approximately 88 000 ha of forests, predominately commercial in nature, are spread within the catchments of the Western Cape, especially in the mountainous regions where areas of higher precipitation (>800 mm) occur. Forestry decreases the provincial water yield by 28 million m³/annum.

Soil degradation is perceived to be increasing in most communal croplands, grazing lands and settlements, while crusting (surface sealing) and soil compaction are increasing in overgrazed, bare patches of land, in irrigated areas and especially in the rain-fed, grain-producing areas. The 2005 State of Environment Report indicated that most of the land under cultivation is not suitable for agriculture, which highlights the need for effective land management plans and the utilisation of land capability maps for the province.

Responses to changes in land use tend to be multi-sectoral due to the wide variety of uses and needs related to land. Environmental governance in terms of land is entrenched in many laws and policies, institutions and stakeholders, yet effective management and control remains elusive due to factors such as policy conflicts, weak implementation or poorly integrated policy hierarchies. It was found that the approach to management and planning tends to be fragmented and reactively driven by land use rather than a clear understanding of soil potential or capability matched to appropriate utilisation.

There is a need for integrated planning that takes cognisance of existing land capability and environmental thresholds, necessarily based on a comprehensive, consistent and

current dataset on land cover and land uses. It is only once such comprehensive and recurring mapping is available, that better understanding of this resource can be gained and optimization strategies informed. Collaboration needs to take place between entities that use or manage land resources to ensure accurate, comprehensive mapping takes place on a frequent enough time basis to provide useful information on land use and land transformation.

Table 2 contains a summarised overview of the uncertainty around 'Land' in relation to the various pressures, impacts, challenges, progress and recommendations for future progress in land management. On the balance of evidence, and in consideration of the lack of current data, the outlook for Land is deemed to be 'declining'.

Table 2: Land overview

Land Outlook	Declining
Pressures	<ul style="list-style-type: none"> ● Agriculture ● Urban growth ● Possible warmer, drying climate ● Access to land ● Mining on the West Coast
Impacts	<ul style="list-style-type: none"> ● Reduced ecosystem services ● Loss of productive land ● Declining aquaculture / fisheries (climate change & overuse, poor management)
Challenges	<ul style="list-style-type: none"> ● Lack of updated land cover information ● Looking forward: Changes to land-use planning laws will need to be carefully managed
Progress	<ul style="list-style-type: none"> ● Provincial Spatial Development Framework (2013 review underway) ● 23 Formalised Municipal Spatial Development Frameworks ● Coastal setback lines in process of being established
Recommendations for action	<ul style="list-style-type: none"> ✓ Secure appropriate updated information sets at regular intervals ✓ Support Conservation Agriculture ✓ Develop and implement Adaptation and Mitigation plans for climate change ✓ Integrated planning approach

4.2 Biodiversity and Ecosystem Health

OUTLOOK: DECLINING

The Western Cape is home to a rich and varied biodiversity consisting of Fynbos, Nama Karoo, Succulent Karoo and Thicket biomes (Figure 5). The Cape Floristic Region (CFR), which includes the Fynbos and Succulent Karoo (nearly 40% endemic), is a globally recognised hotspot of biological diversity or 'biodiversity'. The CFR alone contains more than 13 000 plant species.

In the face of a growing economy, conservation of biodiversity and the preservation of ecosystem functioning has become a focus area in the province. Whilst the tourism industry benefits from this natural abundance, it is not the only economic sector to benefit. Other economic sectors such as agriculture and the green economy all rely on ecological goods and services (or 'ecosystem services') and require a functioning natural environment in order to thrive. In the highly sensitive Western Cape region, maintaining biodiversity, ecological functioning and the related provision of ecosystems services is critical. Degradation or loss of system integrity will alter or destroy the natural resource base, negatively affecting human well-being.

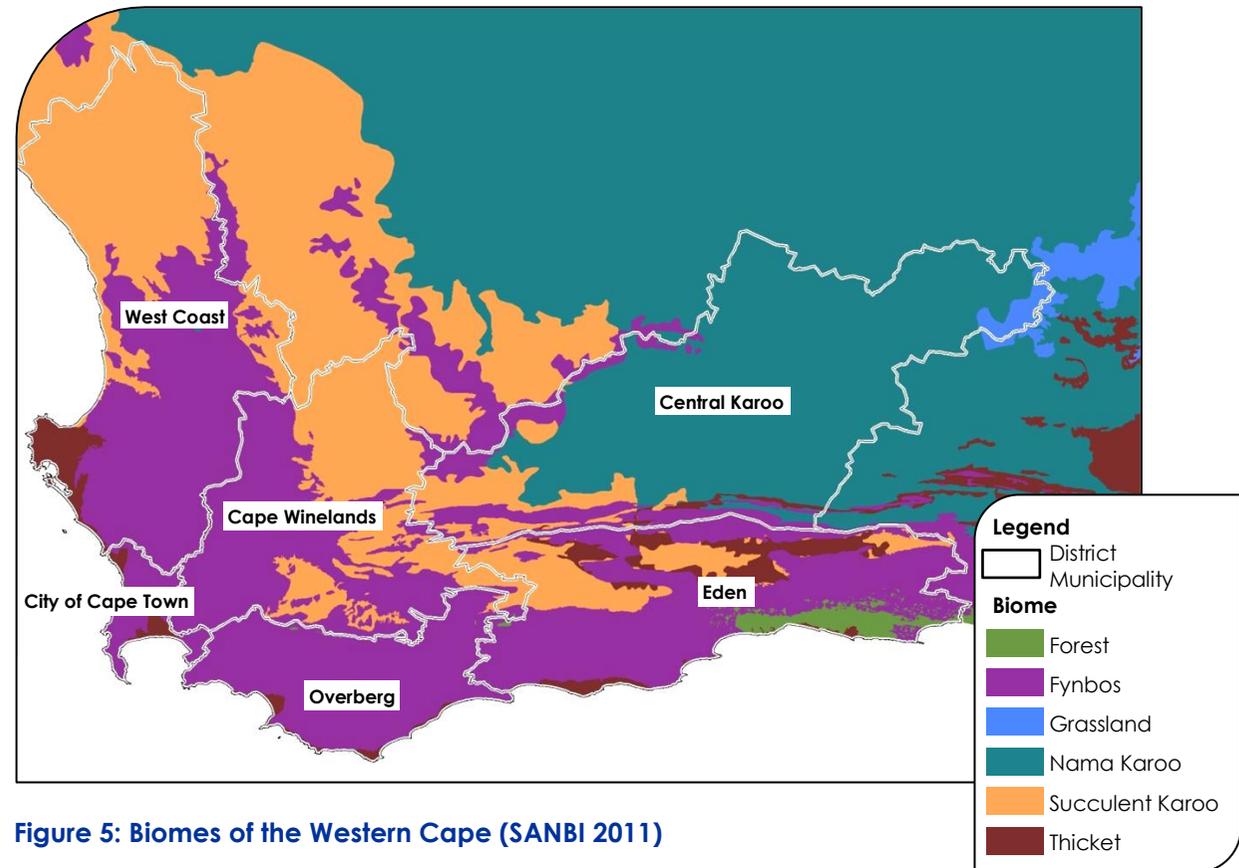


Figure 5: Biomes of the Western Cape (SANBI 2011)

Ecosystem Services include all the value derived from a functional ecosystem. It can include the cleansing of water and the atmosphere, natural carbon sinks, flood attenuation, provision of food (e.g. grazing potential), etc. It is upon these goods and services that food security relies, as do most other human activities or economic sectors.

Actual loss in biodiversity is impossible to measure directly. Measurements of the loss of natural areas that host the most valuable species assemblages are therefore used as

proxies. At the same time it is possible to reflect on the current level of threat that species face in the wild.

There are currently 58 threatened terrestrial ecosystems in the Western Cape, of which 21 are critically endangered, 14 are endangered, and the remaining 23 are classified as vulnerable. More than a third (34.6%) of the City of Cape Town area comprises threatened ecosystems; similar to this is the Overberg district at 33.1%. The West Coast comes in at 19.9% and Eden at 13.9%. There are no threatened ecosystems indicated in the Central Karoo region. The most concerning fact is that 10 critically endangered, 6 endangered and 9 vulnerable ecosystems have no official conservation protection. All vegetation types are also considered to be highly fragmented.

In terms of individual species, 70% of all freshwater fish, 13% of plants, 10% of mammals, 5% of reptiles and 5% of birds are considered threatened.

Indigenous freshwater fish species are under severe threat from habitat degradation and the impact of invasive alien fish. This is an aspect that needs urgent attention in conjunction with concerns over water resources in general.

Information on marine fish and invertebrates is severely limited, both in terms of information on marine species assemblages or dynamics, and in terms of species

numbers. It is assumed that cartilaginous fishes (sharks, rays, skates and chimaeras) are the most threatened group of marine organisms.



Given the threatened status of a range of species present in the Western Cape, it is imperative that more effort be placed in conservation efforts to ensure proper protection of what is essentially a local, national and global asset. To arrest the loss of biodiversity, sufficient habitat for threatened species need to be protected or conserved. For example, most of the biodiversity conservation targets for fynbos vegetation types are yet to be realised. Time is running out fast though, since for many ecosystems the percentage of remaining natural habitat is already less than the viable biodiversity target.

The findings of the Biodiversity and Ecosystem Health chapter can be summarised as an overall declining outlook. Table 3 contains a brief summary of the key pressures, impacts, challenges, progress and recommended critical areas for action.

Table 3: Biodiversity and Ecosystem Health overview

Biodiversity Outlook	<i>Declining</i>
Pressures	<ul style="list-style-type: none"> ● Agriculture ● Urban growth ● Invasive alien species ● Possible warmer, drying climate
Impacts	<ul style="list-style-type: none"> ● Reduced ecosystem services ● Threatened natural wealth
Challenges	<ul style="list-style-type: none"> ● Many critically endangered vegetation types have less remaining spatial extents than what is required for conservation ● 'Mandate paralysis'
Progress	<ul style="list-style-type: none"> ● Protected areas being expanded ● Extensive conservation planning
Recommendations for action	<ul style="list-style-type: none"> ✓ Protection for Critical Biodiversity Areas and adoption of biodiversity planning into local SDFs ✓ Support and expand Green Infrastructure ✓ Understand the value & contribution of ecosystem services ✓ Ecological Goods and Services - enhance & support functionality of ecosystem through programmes that reduce the vulnerability of the poor ✓ Use overlapping mandates to enhance action, not confuse it

4.3 Inland Water

OUTLOOK: DECLINING

South Africa is a water scarce country and the resource is unevenly distributed across the country's landscape. Importantly for the Western Cape, a strong seasonality and micro-regional differentiation determines the balance between availability of water and the demands from water users.

The *status quo* for surface water availability is currently in a deficit for much of the Western Cape's Water Management Areas, correlating with the degraded ecological condition of the systems. In 2005, a deficit of 115 million m³ existed, an increase from 90 in 2000. Climate change projections identify a progressive drying of the province towards the south-west. This will further reduce surface runoff and slow down the recharge rate of groundwater aquifers. The water shortage is also likely to be exacerbated by the expected increase in temperature and resultant increased evaporation rates.

This situation requires emphasis on the effective management of land use activities, such as human settlement and development expansion, and agriculture. This is particularly important in order to provide food security for the future.

Almost all human activities that require water result in the degradation of the resource and its associated ecosystems. This is a consequence of the modification of natural surface water resources by channel and flow alterations, nutrient loading and pollution. The most noticeable urban impact relates to the increase of impervious surfaces which

condition, yet are ecologically functional and in fair to good condition. Tributaries are often in a better condition than the main rivers. Furthermore, the findings of the River Health Ecstatus assessment (Figure 7), which provides a reflection of the state of surface water resources based on the monitoring of in-stream and riparian biota

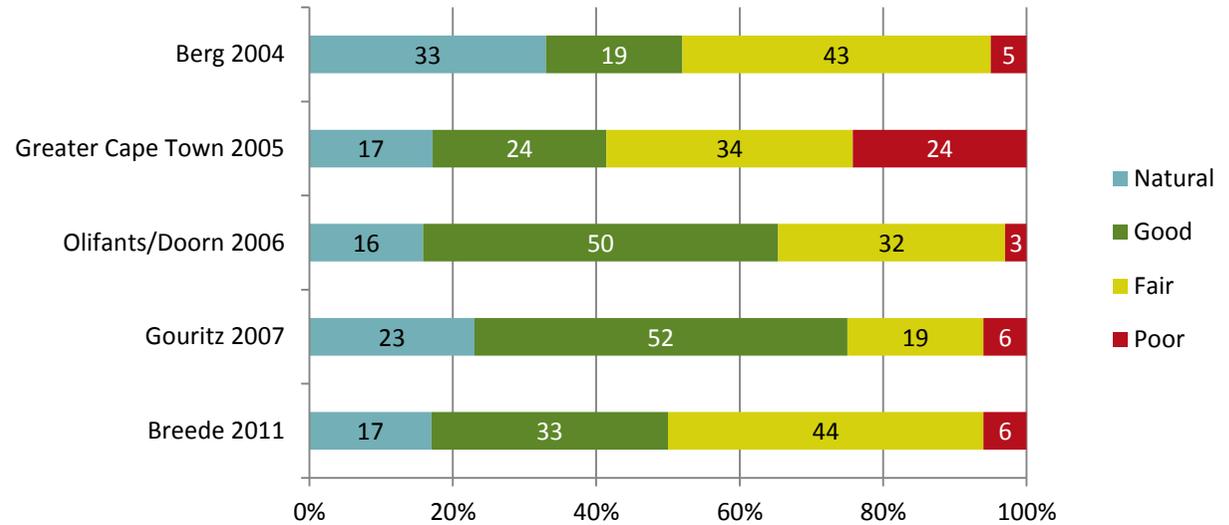


Figure 6: Consolidated River Health Water Quality sampling

alters the hydrology and geomorphology of streams and results in increases of runoff and pollution that reaches wetlands, rivers and ultimately the ocean, and limits recharge of groundwater sources.

The River Health Water Quality assessment (Figure 6) shows that the rivers of the Western Cape largely no longer function in a natural

and ecological indicators, indicate that although highly modified from natural status, over three-quarters of the rivers are in good or fair condition.

The main water quality concerns relate to river health variability and the trophic status of dams in the province. River health and ecological state vary dramatically within

catchments, and despite an overall positive outlook, the fact that many stretches of rivers or streams are classified as 'poor' is unacceptable. The National Eutrophication Monitoring Programme by the Department of Water Affairs further shows that all the large dams in the country, including the

functioning Catchment Management Agencies and the implementation of direct measures and controls for managing significant water resources of our water management areas is a fundamental step in the right direction. Yet the implementation of the principles of integrated water resource

implementation shortcomings, in particular institutional capacity and functioning. The water use verification processes currently underway will be vital in providing the basis for the sound implementation of water reconciliation strategies, climate mitigation measures and support of the establishment of the green economy.

The further prioritisation of ecologically important catchments, the quantification of significant groundwater reserves and the protection of mountain catchment areas are essential for making progress in ensuring resource availability for our future generations. Other initiatives should include increasing alien clearing efforts, more rain water harvesting, water-related restrictions on development, and more watercourse or catchment rehabilitation.

The findings of the Inland Water chapter can be summarised as an overall declining outlook. Table 4 contains a brief summary of the key pressures, impacts, challenges, progress and recommended critical areas for action.

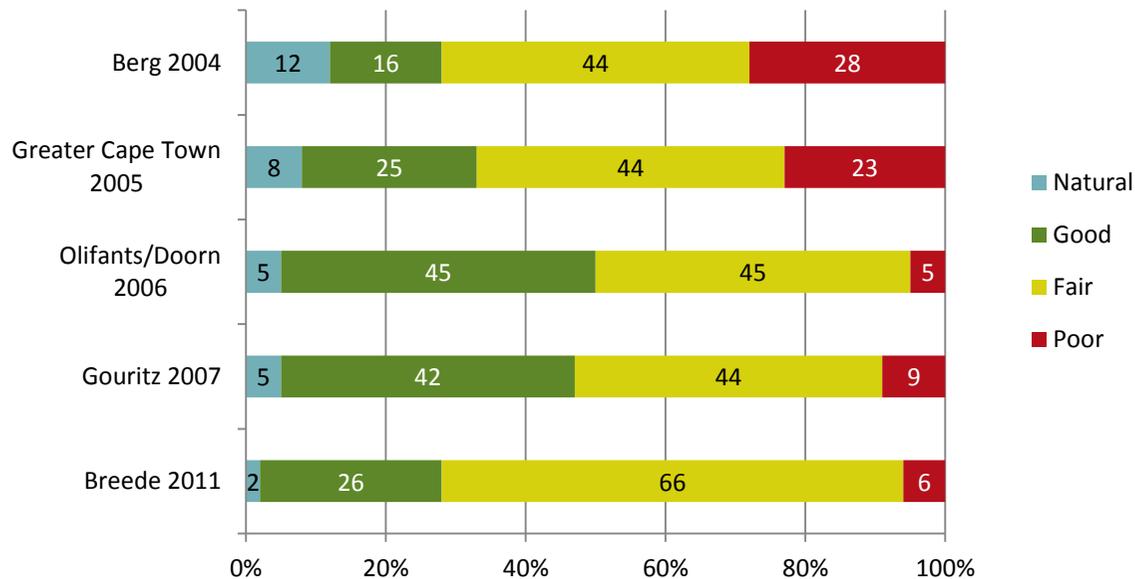


Figure 7: Consolidated River Health EcoStatus Assessment

Theewaterskloof Dam, is at risk due to high nutrient loads from contaminated surface runoff or water discharges.

The implementation of strategic policy and plans from all levels of government will give effect to much needed pressure relief from a water use perspective. The establishment of

management, shared public responsibility and ownership, greater participation and involvement of all stakeholders and corporative governance remains elusive.

The Sustainable Water Management Plan for the Western Cape Province (2012) aims to give effect to the identified responses to

Table 4: Inland Water overview

Inland Water Outlook	<i>Declining</i>
Pressures	<ul style="list-style-type: none"> ● Human settlements ● Agriculture ● Invasive alien species (fauna & flora) ● Climate change
Impacts	<ul style="list-style-type: none"> ● Loss of ecosystem services ● Living conditions ● Eutrophication ● Marine pollution
Challenges	<ul style="list-style-type: none"> ● Water resource deficit ● Must allow for ecological reserve ● Incomplete reconciliation information
Progress	<ul style="list-style-type: none"> ● Western Cape Water Supply System effectively managed ● Berg River Improvement Plan ● Water recycling initiatives
Recommendations for action	<ul style="list-style-type: none"> ✓ Increase options for water reuse and curbing of reticulation water losses ✓ Built environment & Urban infrastructure innovations, e.g. rethink sanitation services ✓ Restore riverine habitat and corridors ✓ Manage alien invasive species ✓ Drive adoption of Conservation Agriculture – more “crop per drop”

4.4 Oceans and Coasts

OUTLOOK: DECLINING

The Western Cape has a coastline in excess of 1000 km, the longest coastline of South Africa's four coastal provinces. Primary development nodes along the Western Cape coast include Cape Town, Saldanha Bay, George, Knysna and Plettenberg Bay, while important ports are located at Cape Town, Saldanha Bay (one of only two deepwater ports in South Africa) and to a lesser extent, Mossel Bay.

Biophysically, the coastline of the Western Cape consists of sandy beaches interspersed with occasional rocky outcrops, headlands and wave-cut platforms, and it has a number of important estuaries and coastal lakes, particularly in the Wilderness area. The coast is naturally rich in biodiversity, due in no small part to the conjunction of the warm Agulhas and cold Benguela ocean currents which causes upwelling of nutrients. Notable natural coastal assets include extensive fisheries resources forming the core of South Africa's commercial fishing industry; kelp, penguin and seal colonies; fynbos; and indigenous coastal forests at various points along the coastline.

The oceans and coastal areas are most significantly impacted on by human activities which disturb the equilibrium of the dynamic and sensitive coastal and marine environments. These impacts are exacerbated by global environmental problems such as climate change, resulting in a deteriorating state of the marine and

coastal environment.

As shown in Figure 8, critically endangered habitats are found along the West Coast near-shore, Eden and Overberg offshore areas, as well as on the continental shelf edge, due to high levels of multiple pressures in these areas (Sink et al. 2012). Endangered

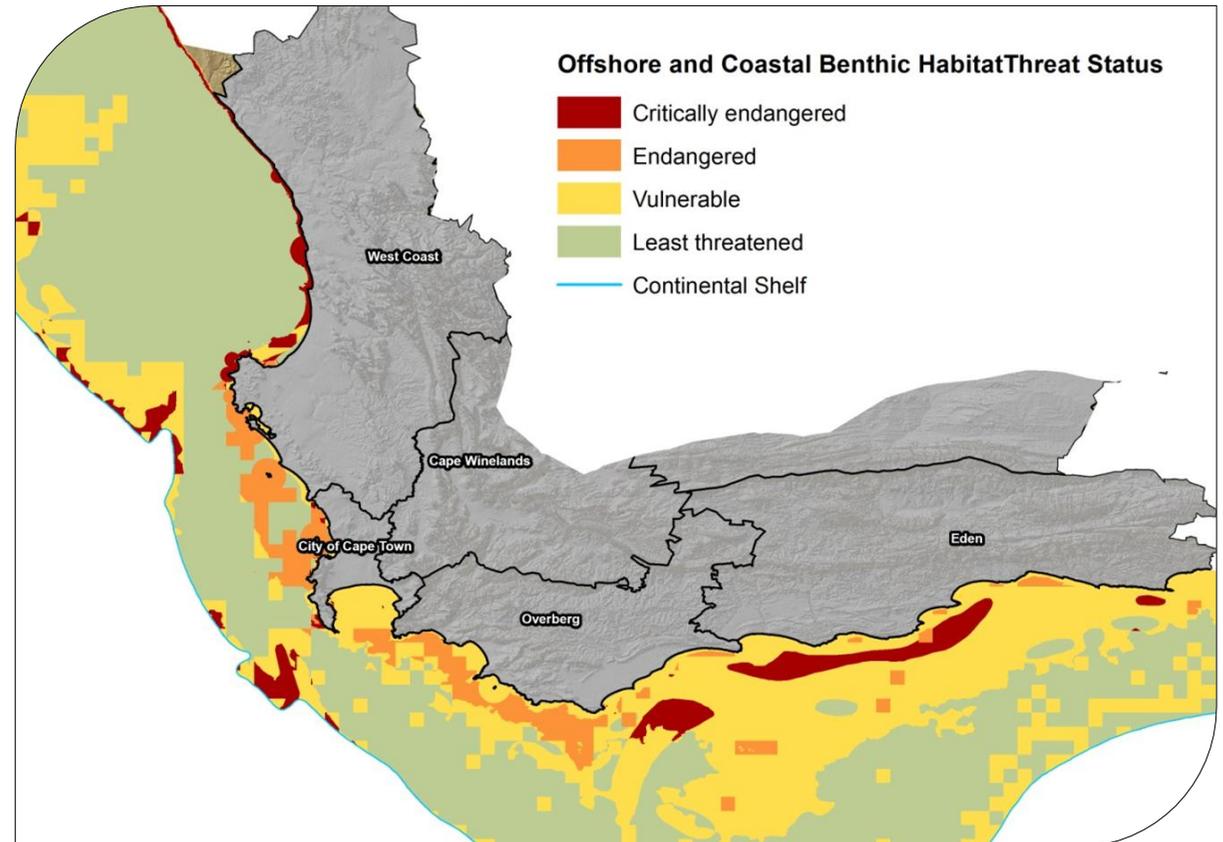


Figure 8: Ecosystem condition for the coastal and offshore benthic environment in the Western Cape region (Adapted from Sink et al. 2012)

areas are concentrated between Langebaan in the northwest and Cape Agulhas in the southeast. All along the coastline, threatened ecosystems are being lost through transformation.

Monitoring done as part of the Blue Flag Beach certification scheme shows that coastal water quality seems to be good and improving over time. While three beaches were above the acceptable limit, the frequency of poor water quality was below 20% of recordings for two of these beaches. From these trends it might appear that the number of beaches with poor water quality has increased with time, however, the frequency of high coliform bacteria counts is lower for the most part. It is thought that poor quality runoff from the rivers and stormwater outlets due to contamination from sewer blockages / overflows and runoff from informal settlements are the main contributing factors to poor water quality at certain bathing beaches, as is decomposing kelp wrack accumulating on beaches.

Estuarine environments are of particular concern. Typically, Western Cape estuaries are highly modified, and characterised by poor health and low levels of protection, except in the Eden District. All Western Cape estuaries are considered to be critically endangered ecosystems.

The concerns identified in the 2005 SOER relating to deteriorating marine and coastal health due to pressures from tourism activities, coastal urban development and over-exploitation of fish stocks remain concerns in 2013. Nevertheless, significant progress has been made since 2005 in terms of conservation and protected areas, monitoring and reporting, as well as legal and institutional responses to coastal issues in the Western Cape. The development of estuary management plans, set-back lines, monitoring programmes and the expansion of Marine Protected Areas (MPA) are just a few examples of the ways in which government is protecting the aforementioned areas of concern. Seven of South Africa's 23 gazetted MPAs are found in the Western Cape, in three different inshore bioregions. While not reflected in the National Biodiversity Assessment 2011, it is noted that the Helderberg MPA has also been demarcated within the City of Cape Town.

Effective responses to the impacts and pressures on the receiving environment are heavily dependent on the available data and information - which is lacking in a number of critical aspects. As indicated in Table 5, advances in gathering of information have been made, however this still requires attention in order to best protect coastal areas.

Climate variability and change is one of the biggest threats to South Africa's coastal regions. Much of the Western Cape coastline consists of sandy shores and is therefore highly susceptible to erosion. Therefore, sea level rise and its interaction with increasing storm frequencies, intensities, wind velocities and local conditions presents a significant threat to the coastline.



The Oceans and Coasts chapter of the 2013 State of Environment Outlook Report describes an overall declining outlook for the theme. A summary of key pressures, impacts, challenges, progress and areas for action is provided in Table 5.

Table 5: Oceans and Coasts overview

Oceans & Coasts Outlook	<i>Declining</i>
Pressures	<ul style="list-style-type: none"> ● Human settlements ● Tourism ● Resource extraction (legal and illegal)
Impacts	<ul style="list-style-type: none"> ● Reduced productivity ● Disrupted coastal dynamics ● Economic value compromised
Challenges	<ul style="list-style-type: none"> ● 'Mandate paralysis' ● Understanding of sustainable resource extraction levels ● Climate change
Progress	<ul style="list-style-type: none"> ● Coastal set-back lines ● CAPE estuaries programme ● Coastal Management Plans
Recommendations for action	<ul style="list-style-type: none"> ✓ Implement coastal management plans ✓ Protect sensitive marine and estuarine ecosystems ✓ Sustainable Coastal livelihoods programmes ✓ Increase certifications under the Blue Flag programme

4.5 Human Settlements

OUTLOOK: IMPROVING

The social dimensions of sustainability cut across fields associated with access to water, energy, food, jobs, education, health, social-ecological resilience, gender equality and social equity. All of these factors have relevance on a local scale, and need to be materially satisfied before environmental sustainability can be achieved.

Results from the 2011 census indicate that there are 5 822 734 people residing in the Western Cape, representing 11.3% of the national count. The population has been growing, with a 2.5% annual growth rate between 2001 and 2011 as compared to a 2.6% annual growth rate between 1996 and 2001. This rapid population growth leads to growth of human settlements and rapid urbanisation, resulting in:

- A housing backlog of approximately 410 000 units, 300 000 of which are in the City of Cape Town;
- The persistence of informal dwellings, estimated at 18.2% of households or 297 017 in total;
- Inefficient urban structure, with apartheid era spatial patterns and a low average

density of approximately 12 dwelling units (du) per hectare (ha); and

- A high reliance on inadequate public transport systems, brought on by necessity rather than choice.

The ever expanding cities and towns have a major impact on habitat fragmentation and destruction resulting in biodiversity loss, the insufficient provision of environmental corridors (required to protect and link threatened ecosystems) and an increase in pollution and waste.

Overall, the province is performing well in the arena of service delivery, which proves to be keeping pace with the ongoing in-migration and population growth. The Western Cape outperforms the other provinces in providing sanitation, electricity and refuse removal services. Only in terms of the provision of water to the dwelling or yard does the Western Cape fall behind Gauteng and the Free State (StatsSA 2012). The percentage of households that has access to tap water has increased between 1996 and 2011, and currently 99% of households have access to piped water. The trend for the Western Cape furthermore shows continually improving water quality from 2010 to 2012, ranking second best in terms of Blue Drop (potable water quality) and best in terms of Green Drop (wastewater treatment systems) certification. Access to electricity in the

province has shown steady increase during the various Censuses, up from 85.7% in 1996 to 88.1% in 2001 and to 93.4% in 2011. More than 90% of households have flush toilets, but a few instances of bucket systems still persist. More than 91% of households are reached by municipal waste removal services.

Transport is important for social development as it enables the movement of people and fosters economic growth by accessing and creating growth opportunities. The Western Cape planning of the transport system for the future 20 to 30 years is documented in the Provincial Land Transport Framework (DTPW 2011). This framework includes commitment to non-motorised transport services and infrastructure; integrated, efficient and reliable public transport; transport services for people with special needs; public transport in rural areas; and ongoing maintenance of infrastructure.

The housing backlog is a concern throughout the province. One strategy employed to ensure housing provision that alleviates suffering and improves livelihoods for as many people as possible within the shortest possible timeframes, is that of incremental delivery which prioritises provision of services, with the quantitative long term roll-out of housing as final outcome. The importance of alleviating the housing backlog has been highlighted in numerous reports, as the

solution to a range of human health, livelihood and environmental health issues. It can also be seen as an opportunity to create jobs, and to invest in sustainable communities for the future.

The Western Cape has responded to the challenges with a Provincial Spatial Development Framework (WCG 2009) which contains the policies and action plans divided into three main areas of intervention: socio-economic development, urban restructuring and environmental sustainability. These areas of intervention aim to minimize the pressures of environmental change caused by human settlements.

The findings of the Human Settlements chapter can be summarised as an overall improving outlook. Table 6 contains a summary of the key pressures, impacts, challenges, progress and recommended critical areas for action.

Table 6: Human Settlements overview

Human Settlements Outlook	<i>Improving</i>
Pressures	<ul style="list-style-type: none"> ● Western Cape population changes: <ul style="list-style-type: none"> ● 14.3% (1996-2001) ● 28.7% (between 2001-2012) ● In-migration ● Urbanisation
Impacts	<ul style="list-style-type: none"> ● Encroachment on natural habitats ● Compromised ecosystem services ● Pollution and waste ● Demand for resources
Challenges	<ul style="list-style-type: none"> ● Need for integrated planning ● Restrictive regulatory and administrative systems ● Increasing the rate of delivery
Progress	<ul style="list-style-type: none"> ● Service delivery keeping pace with population growth and migration ● 'Blue Drop' and 'Green Drop' improvement ● Plans for incremental housing delivery ● Green Buildings increasing ● Improved Disaster risk management responses
Recommendations for action	<ul style="list-style-type: none"> ✓ Remove obstacles to innovative (green) urban development ✓ Revolutionize transportation systems ✓ Improve climate change adaptation

4.6 Air Quality

OUTLOOK: STABLE

Human activities contributing to the concentration of atmospheric pollutants are focused around the City of Cape Town, at industrial and mining operations in the West Coast, within the intensive agricultural areas of the Cape Winelands and Overberg, as well as at the industrial and petrochemical activities in the Eden District. As indicator, carbon emissions for the City of Cape Town is given in Figure 9, showing that emissions are by-products of transportation (liquid fuels, electricity), domestic energy use (electricity, coal and paraffin) and industrial processes (electricity, coal and diesel). Other pollutants include fugitive emissions from agricultural activities and industry.

Monitoring of air pollution across the province shows that indicative pollutant levels are generally within universally acceptable limits. Air quality is therefore deemed as 'stable' with the most prevalent pollution source noted as traffic within the urban areas, and the most concerning impact being indoor air pollution in low income areas. In these areas, the burning of coal, paraffin and biomass for heating or

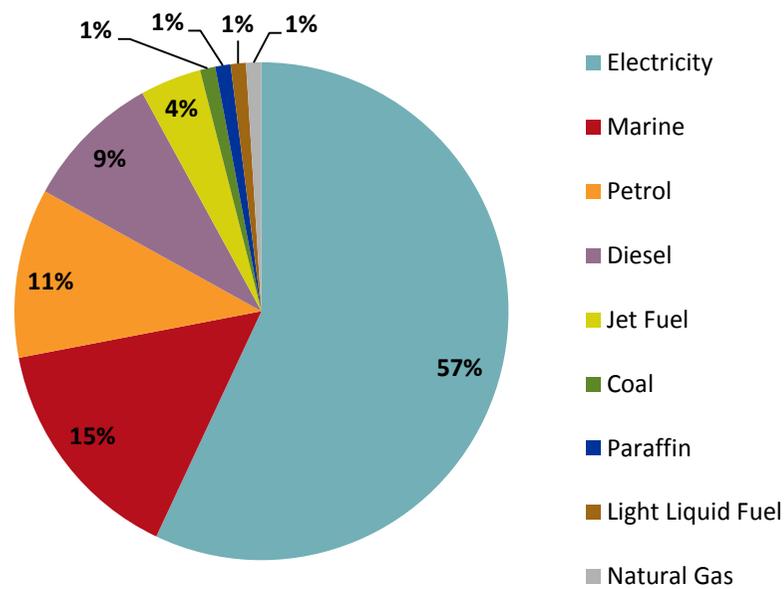


Figure 9: Sources of carbon emissions in the City of Cape Town

cooking lead to exceptionally high levels of indoor air pollution, even though a high percentage of households have access to electricity.

Specific progress has been made in terms of the addition of monitoring stations to the monitoring network; however, the absence of consistent long term air quality monitoring records is a limiting factor for air quality management, with the coverage of the monitoring network and related air quality management plans needing further

improvement. Currently eight Local Municipalities have fully developed Air Quality Management Plans. Nine more are in development, and seven municipalities have not commenced with the development of this plan.

Effective air quality management needs effective engagement and co-operation between spheres of government, as well as integration across different planning processes. Cross-process planning will very effectively limit the need for 'after the fact reaction'. For example, good spatial planning leads to an efficient city form, improving transportation efficiency and in turn improving overall air quality.

In order to ensure this is possible, funding at municipal level will need to be made available. This will require planning for air quality management at the IDP level. To aid this process a provincial needs assessment has already been undertaken, which includes a map of communities that have been affected by air pollution.

Table 7 summarises the key pressures, impacts, challenges, progress and recommended critical areas for action related to Air Quality.

Table 7: Air Quality overview

Air Quality Outlook	Stable
Pressures	<ul style="list-style-type: none"> ● Transportation (esp. diesel) ● Domestic fuel burning ● Urbanisation
Impacts	<ul style="list-style-type: none"> ● 'Brown haze' ● Indoor air pollution ● Carbon footprint
Challenges	<ul style="list-style-type: none"> ● Future shale gas exploration ● Transportation ● Obstacles to implementation of renewable and micro-generation solutions (innovative 'green' projects)
Progress	<ul style="list-style-type: none"> ● Ongoing roll-out of monitoring stations ● Generally good quality
Recommendations for action	<ul style="list-style-type: none"> ✓ Improve coverage of monitoring network ✓ Remove obstacles to innovative 'green' urban development ✓ Revolutionize transportation systems

4.7 Climate Change

OUTLOOK: DECLINING

Scientific consensus holds that if we are to avoid potentially devastating global climate change, we have to ensure that the atmosphere's average temperature does not increase by more than 2°C by limiting the amount of greenhouse gases (GHG) emitted into the atmosphere. All have a role to play in reducing our global contribution to the greenhouse effect, and clearly the Western Cape has a share in the South African responsibility towards the reduction of national GHG emissions. This will require uncomfortable but necessary paradigm shifts based on a sound policy framework.

Comparison with previous years shows a continued growth in total Carbon Dioxide equivalent (CO₂e) emissions in the Western Cape (Figure 10) with a similarly rising contribution per inhabitant of the province. At 8 tonnes per capita, the Western Cape ranks along with developed European countries rather than developing peers. The intensity is much higher than the average in both Brazil and India, and even that of China.

Carbon emissions attributed to electricity consumption is the dominant contributor to

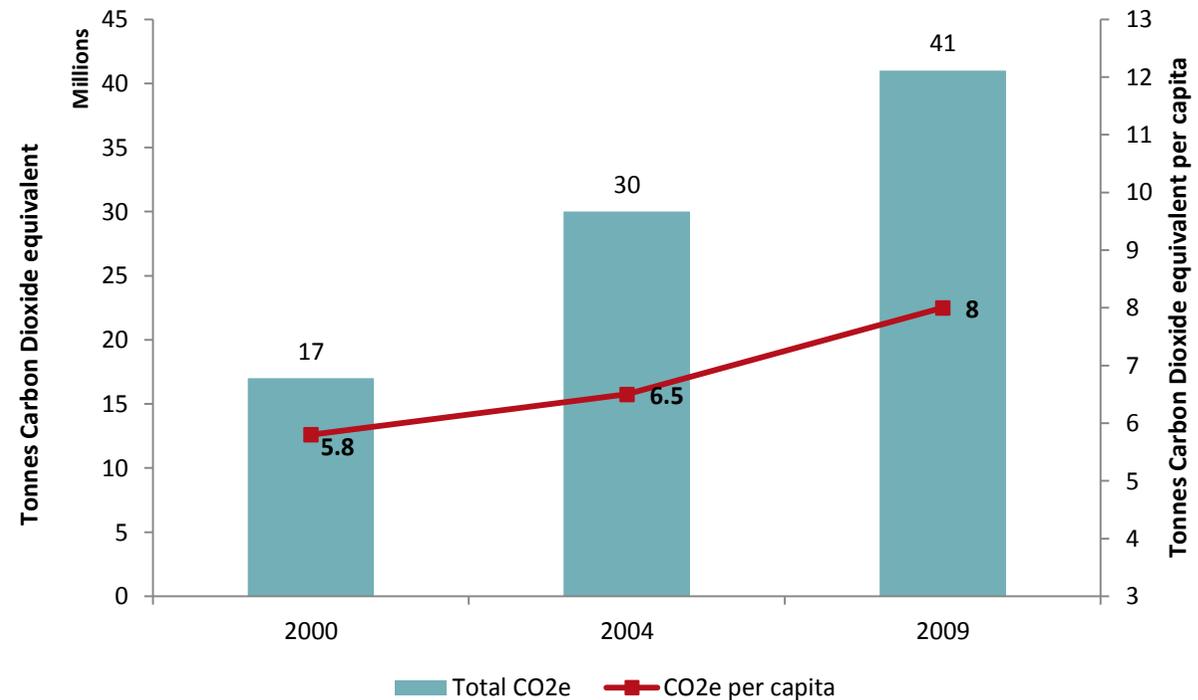


Figure 10: Western Cape emissions as total and per capita Carbon Dioxide Equivalent

the overall carbon footprint of the Districts, with the West Coast (energy intensive industries) and Central Karoo (transportation) being exceptions. As expected, most emissions originate from activities in the City of Cape Town and West Coast District linked to transportation, industrial facilities and urban development. To address the high carbon intensity, efficiencies or alternative sources of energy must be found in the transportation and industrial sectors. The biggest impact would be made by a major

switch to renewable energy and more efficient modes in the transport sector. Further efforts should also be directed at improved emissions tracking and carbon accounting in the province.

Although climate change is already taking place, it is still hard to perceive directly due to the scale of the changes and the fact that to a degree it is still being masked by the inherent variability of weather and climate patterns. Broadly speaking however,

it is expected that over time Western Cape minimum temperatures in late summer and late winter will be warmer, very hot days will become more frequent, and rainfall could decline. Sea levels will also rise slightly, which, can lead to severe coastal flooding and increased damage when combined with extreme weather. The 'symptoms' of climate change are placing pressures on our daily activities through impacts such as increased intensity of storms, higher average temperatures, water shortages, rising costs of food due to lower crop yields, increasing pressure on public health systems and a compromised fruit and viticulture sector.

Both the Western Cape's contribution to climate change and its vulnerability to the changes need to be recognised and the impacts understood. Adaptation to unavoidable climatic changes and the impacts that will result from those changes is required in order to create a more resilient society that can 'weather the storms'. This includes creating social systems that can cope with increased climate stress, infrastructure with sufficient capacity to compensate for variations in temperature and precipitation, and economic activity that has a built-in resilience to external shocks.

Overall, the Western Cape appears to be responding well to climate change. This can

be attributed to the swift development of policy and strategies around this topic. Strategic Provincial strategies have been adopted for climate change responses, and targets for emission reductions have been specified in the Climate Change Strategy and Action Plan. The Provincial Strategic Objectives Work Groups have taken up the energy and emissions reductions targets. Municipal Support Programmes are in place to give direction to municipalities in the development of Climate Adaptation Plans and Sustainable Energy Plans and the City of Cape Town is well advanced in terms of climate change responses and the transition to a green economy and sustainable society. A foundation for the transformation of the energy economy has also been laid in the form of a provincial *Energy Consumption and CO₂ Emissions Database*.

The findings of the Climate Change theme must nevertheless be summarised as an overall declining outlook due to the continued rise in carbon emissions and limited evidence of climate policies being implemented. Table 8 contains a summary of the key pressures, impacts, challenges, progress and recommended critical areas for action.



Darling wind farm. (Photo credit: Bruce Sutherland, City of Cape Town)



Table 8: Climate Change overview

Climate Change Outlook	Declining
Pressures	<ul style="list-style-type: none"> ● Energy use (grid& coal based industries) ● Land use change ● Transportation ● Built environment
Impacts	<ul style="list-style-type: none"> ● Natural disasters ● Distribution of species (biodiversity, fisheries) ● Water stress ● Limitations on agriculture (fruit, viticulture, crop yield) ● Tourism (climate, coastal, carbon tax) ● Living conditions
Challenges	<ul style="list-style-type: none"> ● Long term, cross-sector interventions(e.g. public transport, renewable energy) ● Role & impact of private sector ● Climate projection uncertainty (timing and magnitude)
Progress	<ul style="list-style-type: none"> ● Frameworks and planning in place
Recommendations for action	<ul style="list-style-type: none"> ✓ Stimulate large-scale changes to energy and transport systems ✓ Develop adaptive capacity at the local level to specific climate risks ✓ Ecological Goods and Services - enhance & support functionality of ecosystem through programmes that reduce the vulnerability of the poor

4.8 Energy

OUTLOOK: STABLE/DECLINING

Energy supplies to the Western Cape are dominated by coal-based national grid-supplied electricity, coal, liquid fuels and nuclear energy. Local energy generation takes place at the Koeberg Nuclear Power Station (1 800MW), Open Cycle Gas Turbine peaking power stations in Atlantis and Mossel Bay (2 084MW), the Darling and Klipheuwel Wind Farms, oil refineries, as well as natural gas refineries. Four solar (60MW) and four wind farms (317MW) are planned under the Independent Power Producers (IPP) programme, and Eskom is constructing the 100MW Sere wind farm in the Koekenaap/Vredendal area. Other important resources include the Oribi/Oryx oil field that supplies 2% of the country's liquid fuels, and the 580MW Steenbras/Palmiet pumped storage scheme.

According to the *Energy Consumption and CO₂ Emissions Database for the Western Cape (WCG 2013)*, energy consumption in the province has grown from 247 742 000 GigaJoule (GJ) in 2004 to 270 887 000 GJ in 2009 (excluding aviation and marine figures). It should however be noted that various data uncertainties remain and there is no consistent collection and analysis of data,

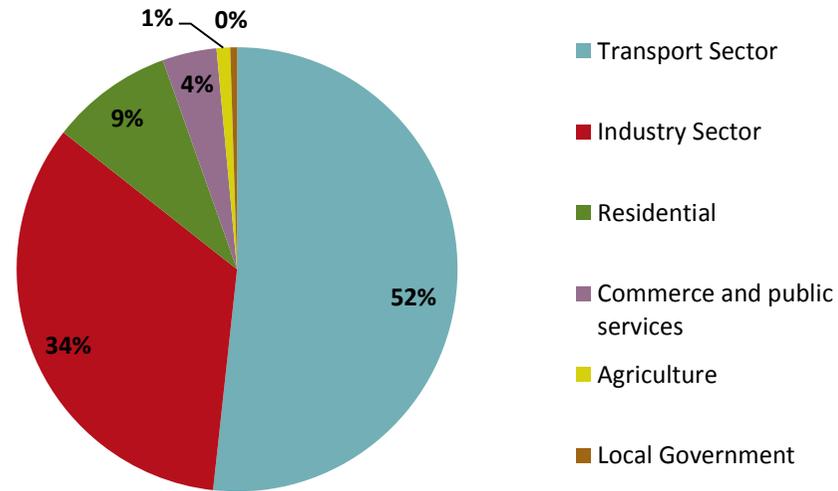


Figure 11: Energy use by sector (WCG 2013)

but the overall trend can be taken as indicative.

Transport (at 52%) and Industry (34%) makes up most of the energy use in the province, with the residential or household sector responsible for just under 9%. The energy consumed by the built environment (residential and commercial) represents 13% of the total energy use.

The nature of the energy use in the province results in significant greenhouse gas emissions (coal-based electricity and transportation) and air pollution (transport and domestic fuel burning), as well as effects on water resources (mining and power station

operation), biodiversity (infrastructure development and pollution) and land (visual impacts).

The Western Cape is slowly shifting its focus from the conventional technologies for energy supply to more renewable and environmentally friendly ways. The Western Cape Department of Environmental Affairs and Development Planning published a White Paper on Sustainable Energy for the Western Cape Province (DEADP 2010), and developed a "Strategic Environmental Assessment for the Placement of Wind Turbines". There is also a strong focus on promoting the use of renewable energy and public transport in the transport sector.

The findings of the Energy chapter can be summarised as an overall stable outlook for the future but potentially declining due to the continued dominance of grid and coal based energy usage.

Table 9 contains a brief summary of the key pressures, impacts, challenges, progress and recommended critical areas for action



Table 9: Energy overview

Energy Outlook	Stable / Declining
Pressures	<ul style="list-style-type: none"> ● Population growth ● Growing consumerism ● Economic growth
Impacts	<ul style="list-style-type: none"> ● Carbon footprint ● Competition for land ● Air quality ● Displaced impacts of generation (mining, power station, transmission)
Challenges	<ul style="list-style-type: none"> ● Energy dependencies (e.g. Liquid fuels for transport) ● Grid-based electricity supply ● Limited information on private sector initiatives ● Role & impact of natural gas ● Mandates (role of WCG & Local Municipalities)
Progress	<ul style="list-style-type: none"> ● Green Economy initiatives, establishment of WCG's GreenCape ● Independent Power Producer (IPP) process facilitation
Recommendations for action	<ul style="list-style-type: none"> ✓ Drive renewable energy development within province ✓ Built environment & Urban infrastructure innovations- rethink energy provision ✓ Gather information on private sector initiatives ✓ Address energy intensity and dependencies ✓ Improve understanding of natural gas potential & impacts

4.9 Waste Management

OUTLOOK: IMPROVING

Solid waste in the Western Cape in 2010 amounted to some 3 807 765 tonnes per annum compared to 1 446 500 tonnes in 2001. It is believed that this could rise to 5.2 million tonnes per annum by 2020. The contribution by the City of Cape Town is approximately 70% of all waste produced in the province. This contribution has decreased since 2001, which could be due to a relatively larger proportional increase in waste generation in the Districts, but is more than likely due to an effort on the part of the City of Cape Town related to reduction and reuse of waste.

Refuse removal services in the Western Cape currently reaches 91.7% of households, a significant improvement over the 1996 level of 86.2%. Where waste removal services are still not undertaken, it can be expected that illegal dumping of waste, unlicensed waste disposal sites and burning of waste as a disposal method will take place. In 2006 some 240 waste management facilities were recorded in the Western Cape, the majority being either permitted landfills or illegal waste disposal sites. Of these, 193 are currently operational (92 general waste disposal sites, 54 drop-off facilities, 15 transfer

stations and 13 materials recovery facilities), and the others have been closed. Regional waste collection facilities in the less densely settled districts are having a positive impact, with drop-off and transfer stations becoming increasingly prevalent.

Waste disposal facilities are potentially sources of both air and water pollution, respectively through the generation of methane and leachate. Proper design and management practices can restrict the impact of these pollution sources, and it may even be possible to make use of methane and leachate as resources. Many of the waste disposal facilities in the Western Cape were not designed in a way that will prevent pollution, and most are not optimised for waste recovery and re-use.

Municipal solid waste revenues do not cover the full operating costs of service provision for waste management in the province. This results in a deficit of about 15% of all expenditures across municipalities, sometimes higher in smaller municipalities. Strategies have therefore been set up to actively reduce the amount of solid waste reaching landfills. The amount of waste diverted from landfills in the City of Cape Town has been calculated to have been up to 14% for the period 2006 to 2011. The reductions in waste disposal can be attributed to a number of the City's

initiatives, including waste sorting facilities like the Kraaifontein Materials Recovery Facility where waste is sorted for recycling, as well as the various composting facilities around the city which utilise organic waste.

The accuracy of general waste generation data in the province is often very low and estimated rather than measured in practice. This is due to lack of recording equipment (weighbridges etc.) and reluctance from operators to disclose sensitive information. It is also acknowledged that legislative compliance for waste disposal facilities is not very good, with many facilities operating without the necessary permits. The Province has committed to a steady improvement of the situation, with a target of a 20% increase in properly licensed facilities by 2014.

Overall, service delivery in Waste Management can be described as improving, but this is off a base of poor information, weak infrastructure and increasing waste quantities. Table 10 contains a brief summary of the key pressures, impacts, challenges, progress and recommended critical areas for action related to Waste Management.

Table 10: Waste Management overview

Waste Management Outlook	Improving
Pressures	<ul style="list-style-type: none"> ● Modernisation/consumerism ● Means of disposal
Impacts	<ul style="list-style-type: none"> ● Waste disposal site capacity constraints ● Contamination of land, air, water ● Health issues
Challenges	<ul style="list-style-type: none"> ● Waste not seen as a resource ● Restricted information flows ● Restrictive regulatory environment ● Landfill space (insufficient planning)
Progress	<ul style="list-style-type: none"> ● Up to 14% waste diversion in CoCT (Materials Recovery Facilities, green waste) ● Waste-to-energy initiatives (landfills, biogas) ● IPWIS (Integrated Provincial Waste Information System)
Recommendations for action	<ul style="list-style-type: none"> ✓ Remove regulatory constraints limiting appropriate reuse/industrial symbiosis ✓ Transform traditional perceptions of waste and innovate around incentives for reduction of waste ✓ Integrated Waste Management- Proper licensing of facilities and reporting of volumes and types of waste ✓ Waste-to-energy initiatives ✓ Appropriate approach to removing organic material from waste stream

5 SUMMARY OF ENVIRONMENTAL INDICATORS

Land	Key points	Trend	
Land cover	<ul style="list-style-type: none"> 4th largest province (10.6% of total) in South Africa 78% natural 22% transformed <ul style="list-style-type: none"> 18.7% agriculture 1% urban 0.7% forestry 0.7% degraded 	<i>Declining</i>	
Land capability	<ul style="list-style-type: none"> No high capability soils – vulnerable agriculture requiring high inputs 	<i>No change</i>	
Land transformation	<ul style="list-style-type: none"> Intensification of urbanisation sprawl 1.6% more agriculture 	<i>Declining</i>	
Biodiversity & Ecosystem Health	Key points	Trend	
Alien invasive species	<ul style="list-style-type: none"> 291 invasive plant species Primary threat to indigenous fish 	<i>Declining</i>	
Biodiversity Priority Areas	<ul style="list-style-type: none"> Progress on expansion of conserved areas but only 2.3% of expansion qualifies as formal protection 	<i>High concern</i>	
Protected areas	<ul style="list-style-type: none"> Since 2002: <ul style="list-style-type: none"> 311 197 ha formally protected (Only 2.4% of which are Critical Biodiversity Areas) 4 861 ha biodiversity agreements 27 077 ha conserved with no legal protection 	<i>Improving</i>	
Habitat fragmentation	<ul style="list-style-type: none"> The province contains 15 of the 17 highly fragmented vegetation types in the country 	<i>Insufficient historical data</i>	

Vegetation types	<ul style="list-style-type: none"> Existing mapping is from the South African National Biodiversity Institute (SANBI) 	No change	
Threat status	<ul style="list-style-type: none"> Threatened species: <ul style="list-style-type: none"> 70% of freshwater fish (16 of 23 indigenous species under threat) 13% of plants (13 489 species total – 1 709 Threatened + 296 Critically Endangered + 575 Endangered + 801 Vulnerable; 68% of National Threatened species total; 2 984 additional species of concern; 21 species Extinct; 1 695 endemic to Western Cape) 10% of mammals 5% of reptiles 5% of birds Marine fish and invertebrates – information not available, cartilaginous fishes are assumed most threatened with 4 of 35 species Critically Endangered Threatened terrestrial ecosystems: <ul style="list-style-type: none"> 21 critically endangered 14 endangered 23 vulnerable 	Insufficient historical data	
Centres of endemism	<ul style="list-style-type: none"> 96% of threatened species are endemic 	High concern	
Inland Water	Key points	Trend	
Water availability	<ul style="list-style-type: none"> Water resource balance (2005): <ul style="list-style-type: none"> Supply 2 522 million cumec Demand 2 637 million cumec Current deficit of 115 million cumec (was 90 in 2000) 	Declining	
Fitness for use	<ul style="list-style-type: none"> River Health Water Quality assessment: <ul style="list-style-type: none"> Overall – relatively good shape 21% natural 36% good 34% fair 9 % poor 	Insufficient historical data	

Freshwater ecosystem health	<ul style="list-style-type: none"> ● River Health Ecstatus: <ul style="list-style-type: none"> ● 6% natural ● 30% good ● 48% fair ● 14% poor 	<i>Insufficient historical data</i>	
Oceans & Coasts	Key points	Trend	
Coastal water quality	<ul style="list-style-type: none"> ● Blue Flag Beaches monitoring shows acceptable state 	<i>Improving</i>	
Estuary health	<ul style="list-style-type: none"> ● Poor health, highly modified, poorly protected and highly threatened (Eden District is the exception to this) 	<i>High concern</i>	
Conservation areas	<ul style="list-style-type: none"> ● 8 marine protected areas ● Mixed results in terms of management 	<i>Improving</i>	
Marine area threats	<ul style="list-style-type: none"> ● Critically endangered marine habitats: <ul style="list-style-type: none"> ● West Coast nearshore ● Eden and Overberg offshore areas ● Continental shelf edge ● Endangered habitats: <ul style="list-style-type: none"> ● Langebaan ● Cape Agulhas 	<i>High concern</i>	
Transformation	<ul style="list-style-type: none"> ● Loss of threatened ecosystems along 14% of the coastline between 2001 and 2009 	<i>Declining</i>	
Human Settlements	Key points	Trend	
Housing	<ul style="list-style-type: none"> ● Informal dwellings constitute 18.2% of households in 2011 (up from 16.7% in 2001) ● Housing shortage of 400 000 units 	<i>Backlog increasing</i>	
Access to basic services	<ul style="list-style-type: none"> ● 99.1% piped water (up 0.8% from 2001) ● 93.4% electricity (up 5.3% from 2001) ● 90.5% sanitation services (up 2.2% from 2001) ● 91.1% refuse removal (up 2.3% from 2001) 	<i>Improving</i>	

Access to transportation	<ul style="list-style-type: none"> Well developed, but historic patterns dominate New forms of public transport taking off 	<i>Improving</i>	
Open space provision	<ul style="list-style-type: none"> Insufficient and often inappropriate 	<i>Insufficient data</i>	
Air Quality	Quantification	Trend	
Atmospheric pollutants	<ul style="list-style-type: none"> Particulate matter (PM₁₀) – below threshold but shows steady increase Nitrogen oxides (NO, NO_x) – acceptable but problems at certain locations Sulphur dioxide (SO₂) – below threshold Green House Gases (GHG) – levels increasing 	<i>Insufficient data</i>	
District breakdown	<ul style="list-style-type: none"> City of Cape Town – higher concentrations of all parameters <ul style="list-style-type: none"> General problem in the form of smog ('brown haze') – linked to vehicle emissions Cape Flats – high PM₁₀ and volatile organic compounds (VOC) – due to domestic fuel burning, traffic and industry Cape Winelands – high particulate matter (PM) and NO₂, linked to fugitive agricultural spraying Central Karoo – transportation related emissions Eden emissions – concentrations at PetroSA, Oudtshoorn (tanneries and abattoirs) Overberg – has highest per capita vehicle ownership, indicating potential issues over time West Coast – concentrated emissions from industries using coal, red oxide dust from iron ore handling at the Saldanha port, mines (e.g. dust from lime production, Matzikama), and aqua/mariculture industries (e.g. St. Helena Bay fishmeal production) 	<i>No change</i>	
Climate Change	Key points	Trend	
Projected change	<ul style="list-style-type: none"> 1°C warming by late 2030s, warmer minimum and maximum Highly uncertain, but possibly drying towards the west, and shorter rainy season, stronger winds, and approximate 5cm sea level rise over 25 years 	<i>Declining</i>	

Carbon footprint	<ul style="list-style-type: none"> ● Total emissions (contribution to greenhouse effect measured in carbon dioxide equivalent (CO₂e) emissions): <ul style="list-style-type: none"> ● 41 303 482 tonnes CO₂e (2009) (compared to ~17 000 000 tonnes CO₂e in 2001) ● 53% of provincial total due to electricity consumption ● Carbon intensity: <ul style="list-style-type: none"> ● Emissions relative to population size - 8 tonnes per capita in 2009 compared to 5.8 tonnes per capita in 2001 ● 178 tonnes per million Rand contribution of Gross Domestic Product (GDP) (2009) ● GHG contributions: <ul style="list-style-type: none"> ● 36% from industry, 28% from transport ● City of Cape Town 57% of total, West Coast District 22% 	Limited historical data	
Energy	Key points	Trend	
Energy generation	<ul style="list-style-type: none"> ● Oribi/Oryx oil field (2% of RSA liquid fuels) ● PetroSA coal/gas-to-liquid plant ● 2x open cycle gas turbines (2 084 MW) ● 2x gas turbines (207 MW) ● Koeberg nuclear reactor (1 800MW) ● Palmiet pumped storage (580MW) ● 4x solar, 4x wind farms planned under the Independent Power Producers (IPP) process ● Eskom Sere wind farm under construction 	Improving	
Energy use	<ul style="list-style-type: none"> ● Total excluding marine and aviation: <ul style="list-style-type: none"> ● 247 742 000 GJ in 2004 ● 270 887 000 GJ in 2009 ● 52% used by transport (previously 35%) ● Mostly coal based electricity and liquid fuels ● CoCT consumes 60%, West Coast 24% 	Declining	

Energy intensity	<ul style="list-style-type: none"> 64 GJ/capita 8t CO₂e/cap Even higher intensity per unit of GDP West Coast 6x higher intensity than provincial average (industries) Central Karoo relatively high due to overland transport 	<i>Concern</i>	
Domestic energy use	<ul style="list-style-type: none"> Households electrified: <ul style="list-style-type: none"> 83.5% in 2005 93.4% in 2011 Decreasing % of households using electricity for heating Energy other than electricity: <ul style="list-style-type: none"> 7% for lighting 13% for cooking 21% for heating 	<i>Improving</i>	
Waste Management	Key points	Trend	
Waste generation	<ul style="list-style-type: none"> Total: <ul style="list-style-type: none"> 1 446 500 tonnes per annum in 2001 3 807 765 tonnes per annum in 2010 70% generated in CoCT, but relative contribution falling Mostly paper, plastic, organic waste and builder's rubble 	<i>Declining</i>	
Waste collection	<ul style="list-style-type: none"> 94% of households have refuse removal services (82% in 2001) 	<i>Improving</i>	
Waste management	<ul style="list-style-type: none"> 193 operational waste management facilities: <ul style="list-style-type: none"> 92 general waste disposal 54 drop-offs 15 transfer stations 13 materials recovery facilities 6 planned/existing regional waste disposal sites 	<i>Improving</i>	

6 KEY ACTIONS AND STRATEGIC PRIORITIES

The key areas of action and strategic priorities that need to be responded to in order to address the declining trend of the state of our natural resources and to enhance the gains made in the socio-economic conditions within the Western Cape identified in this State of Environment Report, are as follows:

Built environment and infrastructure

- Remove obstacles to innovative green urban development and off-grid infrastructure
- Stimulate large-scale changes to energy and transport systems (support renewable energy development, waste-to-energy initiatives)
- Apply an integrated planning approach
- Drive renewable energy development
- Utilise green infrastructure
- Actively strengthen ecosystem services
- Ecological goods and services - enhance & support functionality of

ecosystem through programmes that reduce the vulnerability of the poor

- Protect Critical Biodiversity Areas and integrate biodiversity planning into local SDFs
- Restore riverine habitat and corridors (e.g. Berg River Improvement Plan)
- Implement coastal management plans to protect sensitive marine and estuarine ecosystems
- Increase Blue Flag certifications

Curb wastage of resources

- Increase options for water reuse and curbing of reticulation water losses
- Drive adoption of conservation agriculture - more "crop per drop"
- Remove regulatory constraints limiting appropriate reuse/industrial symbiosis
- Transform traditional perceptions of waste and create innovative incentives for reduction of waste including organic waste
- Address energy intensity and dependencies

Good Governance

- Improve systems for data collection and analysis, and ensure alignment and integration with national programmes

- Improve land cover, air quality and waste information and gather information on private sector initiatives
- Integrated Waste Management must include proper licensing of facilities and reporting of volumes and types of waste
- Enhance integrated planning and incorporate biodiversity & ecosystem vulnerability into mainstream plans
- Use a comprehensive appraisal of natural resources to understand the value to the economy and social welfare

Build resilient communities who can earn a living

- Promote conservation agriculture
- Sustainable Coastal Livelihoods programmes
- Drive Green Economy development
- Develop and implement local Mitigation and Adaptation plans for climate change

7 CONCLUSION

The national and provincial economic and social outlook highlights the growth aspirations and social development needs of the province which are set to place tremendous pressure on the sensitive natural resources in the Western Cape. This overview of the state of the environment shows that although the natural systems are still in a state that can sustain the current levels of social development and economic activity, the socio-economic gains being made currently are at the expense of our natural resources. The outlook for all our natural resources is declining, our land and energy aspects are relatively stable but in need of revision and we have slightly more positive outlooks for our waste management and human settlement indicators. More needs to be done to protect critically sensitive or important environmental features, and the ability of the region to adapt to impacts from climate change is uncertain.

A radical shift in the modus operandi is required throughout the province to respond to these findings. If we do not change our approach to environmental resource management as well as service provision and economic activity, we will see increasing costs of doing business. This will be due to disaster management expenditure

rises, failures of vulnerable economies (e.g. fisheries, small-scale agriculture) and ecosystem services having to be replaced by man-made interventions. Moving forward, service delivery and economic growth must be resource efficient, low carbon based and enhance societal resilience if we are to find a more balanced approach to using our limited resources.

The time has come for concrete implementation of the vision reflected in National and Provincial strategic documents. The key objectives and actions of the National Development Plan, the New Growth Plan and the National Strategy for Sustainable Development highlight the need to achieve a sustainable future for all South Africans. This vision of a sustainable future is reiterated in the high level Western Cape

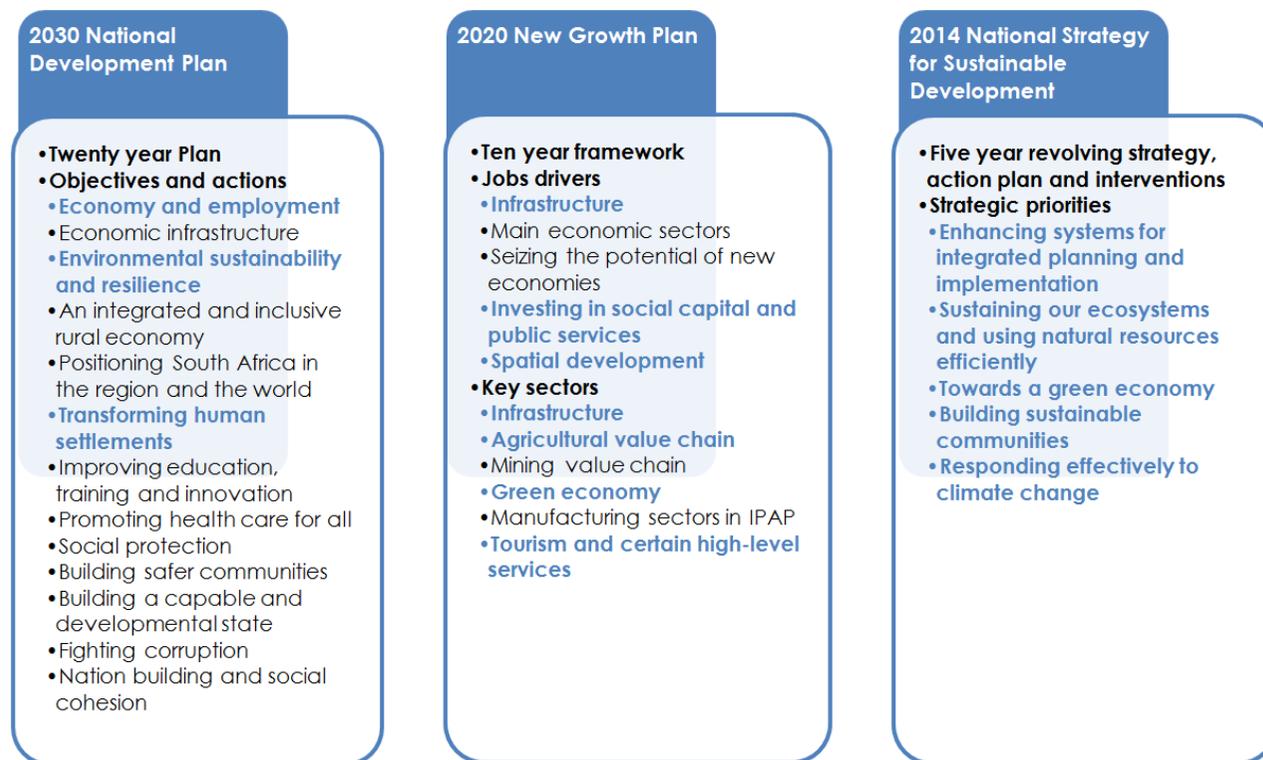


Figure 12: National policy directives

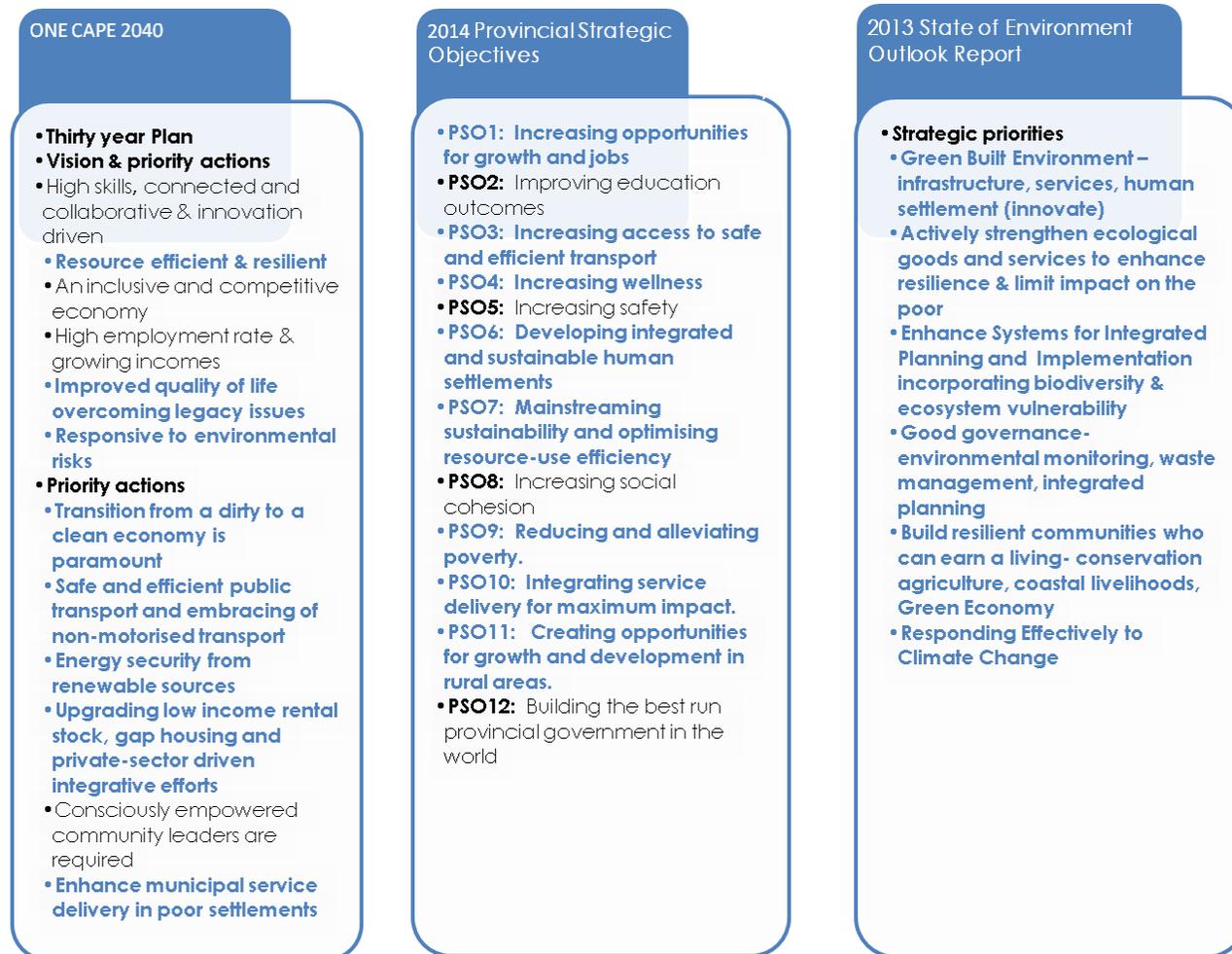


Figure 13: Provincial policy and the State of Environment Outlook

Government planning processes namely the OneCape 2040 Vision and the Provincial Strategic Objectives, as well as in initiatives such as the Green Economy Framework and Skills Programme.

Respectively, Figure 12 (previous page) and Figure 13 show National and Provincial policy directives related to future planning and development in summarised form. Directives related to themes also identified in the Western Cape State of Environment Outlook Report 2013 have been presented in blue text. The high degree of overlap highlights the convergence of thinking on key priorities.

As is evident, most policy convergence lies in stimulating development that is based on resource use efficiency, ecosystem health, functional and well planned human settlements, good governance and regulation, as well as a good education system. Resource use efficiency incorporates the efficient and effective use of all natural resources, including water, energy, land, soil, biodiversity, fauna and flora, air and marine resources. Specific environmental programmes include responses to climate change, a transformed transportation system, green growth and development, and a focus on agriculture and food security.

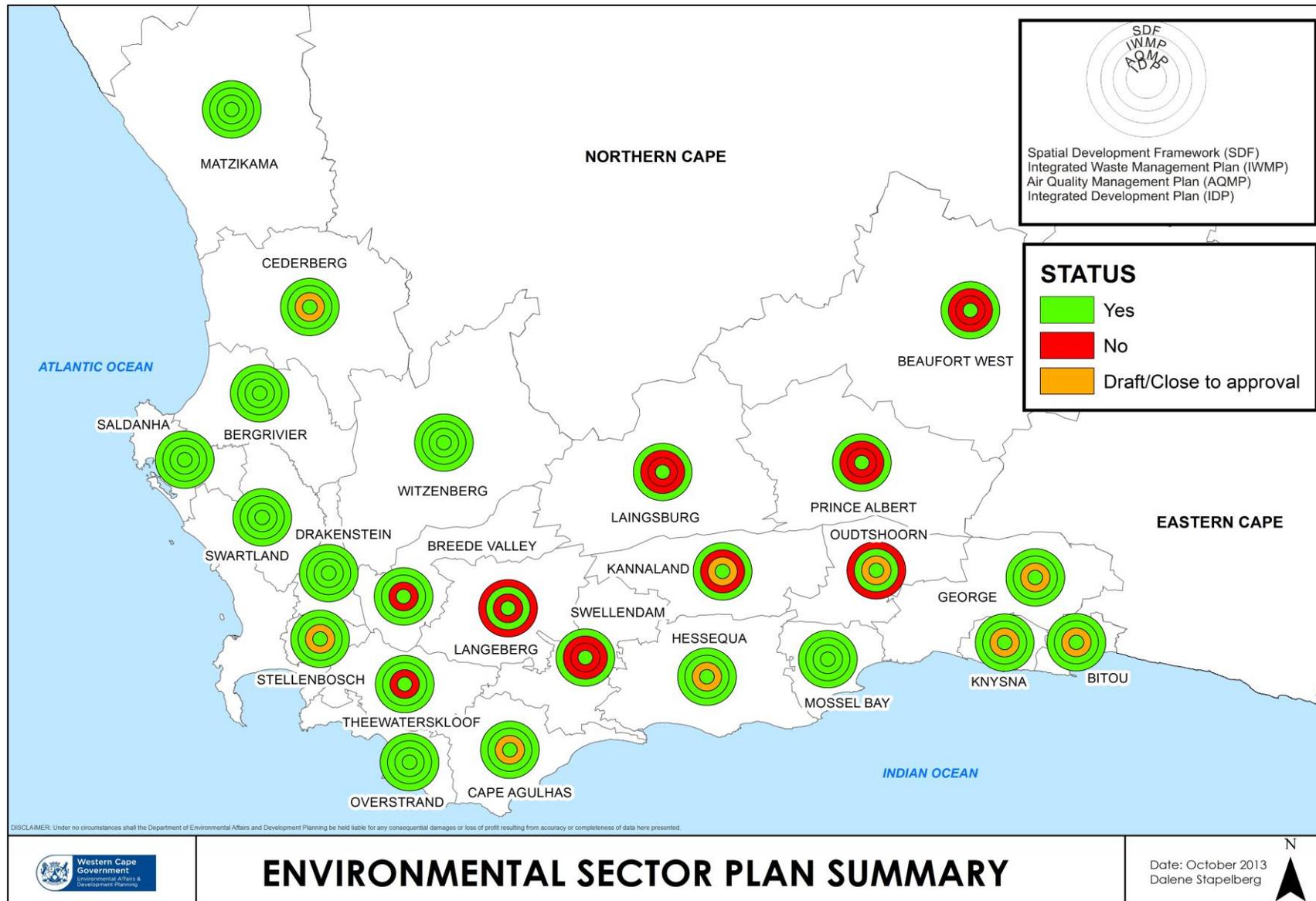


Figure 14: Status of Western Cape local Municipalities' environmental sector plans

One method of measuring the inclusivity of environmental matters within planning at municipal level is to track the inclusion of environmental sector plans in IDPs. Figure 14 is a radial diagram illustrating which environmental sector plans are completed and up to date (shown as green rings), and those that are not (as red rings). Each ring represents a different plan (e.g. Air Quality Management Plans, Waste Management Plans, Coastal Management Programmes, etc.) which are legal requirements. The diagram therefore shows that there is significant work to be done to ensure all required plans are in place to mainstream environmental issues into municipal planning and governance structures.

Whilst State of Environment reporting is to become a regular reporting tool for tracking our resource utilisation trends, it is critical for us to focus on undertaking all activities within government and private sector in a more resource optimal manner on a day-to-day basis.

We cannot rely only on large scale conservation or environmental management interventions. It is our actions, our services, and our consumption patterns which will influence the downward trends in the state of our natural resources.

Day-to-day private business and government decisions and implementation will cumulatively change how we use or abuse our environment. The change needs to start with each of us today.

Let us make it Better Together.

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