



**Western Cape  
Government**

Environmental Affairs &  
Development Planning

**BETTER TOGETHER.**



**Western Cape Government  
Green Economy Report 2015**

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## ABOUT THIS REPORT

This is the second Western Cape Government (WCG) *Green Economy Report*, published in December 2015. This report aims to provide our stakeholders with a solid basis for assessing our work in the green economy and contextualise the WCG policy and strategy response. The report:

- Identifies the green economy issues that are most material to the Western Cape, focusing on the role for provincial government, specifically
- Prioritises report topics in line with the *Green is Smart Strategy Framework* and the *Western Cape Government Green Economy Indicators*

The scope of this report covers work undertaken and progress achieved under the WCG Green is Smart Green Economy Strategy Framework for the financial year beginning on 1 April 2014 and ending on 31 March 2015. This was the second full year of Green Economy projects in the Western Cape.

Due to the nature of the data for the Western Cape Green Economy Indicators, there is a reporting lag of at least one year for most of the indicators.

The WCG Department of Environmental Affairs and Development Planning Directorate Sustainability compiled this report. The Directorate Sustainability would like to acknowledge all colleagues and stakeholders who have contributed to this report.

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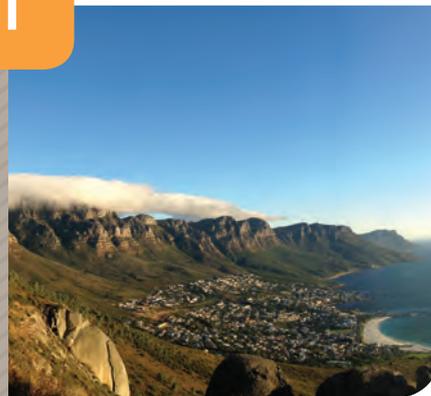
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Cover image: **Warren Rohner** - Darling National Demonstration Wind Farm in Cape Town, South Africa.  
[https://commons.wikimedia.org/wiki/File:Darling\\_Wind\\_Farm.jpg](https://commons.wikimedia.org/wiki/File:Darling_Wind_Farm.jpg)

Page 35: **Warren Rohner** - Darling National Demonstration Wind Farm in Cape Town, South Africa.

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# Introduction



The National Government of the Republic of South Africa defines the green economy in line with the United Nations Environment Programme (UNEP) as **“an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”** (UNEP, 2014). As a global policy agenda, the green economy is not only concerned with optimal natural resource management, conservation and allocation; but also supports social development and economic growth and employment aims of the country, and its provincial and local governments.

The green economy offers a lens through which the interdependencies between human and natural systems can be managed differently. There are two aspects to the green economy:

1. Improving resource efficiency and optimisation, and mitigation of environmental risk in the economy (‘greening’ our economy).
2. Identifying and stimulating new value chains related to sustainable natural resource use and management, as well as sustainable energy, developing the waste economy, and developing ecosystems.

The green economy requires a greening of the economy and as such is not only a government programme, but includes the private sector, households and communities.

## 1.1 AN INCLUSIVE AND SUSTAINABLE ECONOMY

The Western Cape Government (WCG) has committed to implement policy for inclusive and sustainable economic growth. The markers of inclusive growth that have framed this economic policy approach include sustainable productive job creation, increased productivity levels and real earnings of currently employed people. WCG has identified growth in ‘green’ job creation in renewable energy and related industries, and in the agricultural sector (both production and processing) as potential drivers of inclusive growth (Western Cape Government Provincial Treasury, 2014). This prioritisation is supported by the green economy strategy framework for the province, *Green is Smart*, under which specific projects have been implemented to unlock potential in these sectors (see Section 4.3 for more detail).

The past two and a half years of actively driving the green economy in the Western Cape has revealed new opportunities for provincial and local government, as well as for firms in the private sector. Many companies with operations in the Western Cape have responded to environmental risks and opportunities of their own accord, making the strategic choice to pursue energy efficiency and other environmentally astute measures

as well as developing new green products and services (CDP, National Business Initiative, & Incite Sustainability, 2013). While there are several outstanding cases of private sector-led innovation in energy, water and waste management, it is imperative that different government departments and agencies identify enabling roles to incentivise and support this action, as well as to scale the impact. For this purpose, WCG and the South African National Government have established organisations, such as GreenCape and the National Cleaner Production Centre of South Africa (NCPC), respectively.

Considering issues of inclusivity, the green economy offers sustainable technologies that can improve the quality of service delivery such as the provision of subsidised housing, school infrastructure and access to water and sanitation.



SOURCE: SOLA Future Energy, turn-key installation and operation of the Black River Park PV project.

## 1.2 PROVINCIAL ECONOMIC REVIEW AND OUTLOOK

The Provincial Economic Review and Outlook (PERO) is published annually. It reflects on both the past year of performance as well as emerging risks and opportunities. South Africa, including the Western Cape, has a modest economic growth outlook. According to the 2014 report, between 2014 and 2019, an average economic growth rate of 3.0% is expected in the Western Cape, peaking at 3.3 per cent in 2019. The economy is showing signs of the 'middle income trap': low investment; slow growth in the secondary sector; limited industrial diversification; and poor labour market conditions (Western Cape Government Provincial Treasury, 2014). Current trends suggest that growth is likely to be driven by the tertiary sector.

It is in this challenging context that the PERO seeks to identify opportunities to stimulate investment and inclusivity. One of the major obstacles to sustainable job creation identified in the PERO is the lack of appropriate skills. Energy supply insecurity is another constraint on local economic development in South Africa (OECD, 2015). In the context of the green economy, within the applicable constitutional, legislative and regulatory frameworks, the challenge is to respond to energy security needs with sustainable technologies, in a way that also stimulates opportunities for local manufacturing and local artisans.

Another key green economic opportunity identified in the PERO is the development of the agricultural sector, which is a key strength and strong performer in terms of its contribution to exports for the Western Cape. It is likely that this sector will continue to be important, especially in its contribution to rural economies within the province. The sector is exposed to several environmental risks, however, which require resource efficient and innovative approaches. Water and land management failures and climate change, pose threats to the longer-term potential of the sector. However, there are also opportunities, especially in relation to agro-processing.

A key message in the PERO, which is also echoed in the *Provincial Spatial Development Framework* (PSDF), is the need for contextually appropriate economic interventions that make sense for the specific location within the province in which they are implemented. A spatial approach to local economic development planning requires successful cooperative governance between municipal, provincial and national levels of government, as well as cooperation with communities.



SOURCE: Western Cape Government Department of Agriculture



## Policy Shifts

### 2.1 GLOBAL

The greening of the global economy remains high on the agenda of international multilateral organisations. Reflecting the shifts at a regional and subnational level, the global discourse is oriented strongly around issues of equity of access to natural resources services. Consequently, there has been a strong focus on inclusive solutions, through job creation and business development, innovative service delivery solutions and new sustainable technologies.

UNEP has partnered with other UN agencies and civil society to develop a vision for the green economy, beyond 2015 (UNEP, 2015a, 2015b). Globally, 65 countries have embarked on green economy and related strategies, and 48 of them are taking steps to develop national green economy plans. Ten African countries have adopted or are developing green economy policies and plans (including South Africa, Mozambique, and Ethiopia). 40 countries are signatories to the OECD *Declaration on Green Growth*, including all five BRICS (Brazil, Russia, India, China and South Africa) countries.

There are a host of global initiatives that focus on specific aspects of the green economy, including, for example:

- Partnership for Action in the Green Economy (PAGE)
- UNEP Finance Initiative
- Green Growth Knowledge Platform
- UNEP10YFP
- UN-REDD

WCG needs to ensure that it keeps pace with global priorities in order to facilitate current and future engagement and support. To this end, WCG has mapped its green economy priorities against the international Sustainable Development Goals (SDGs), which replace the Millennium Development Goals. The 17 SDGs are action-oriented, crosscutting goals, applicable to all countries, to focus global development efforts. Indicators and targets to measure progress across countries accompany each of the goals.

TABLE 1:

## SUSTAINABLE DEVELOPMENT GOALS ALIGNMENT

FOCUS AREA	DESCRIPTION	COVERED IN 'GREEN IS SMART'	COVERED IN WCG GREEN ECONOMY INDICATORS
1	End poverty in all its forms everywhere	Not covered	Socio-economic
2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Smart Agri-production	Socio-economic
3	Ensure healthy lives and promote well-being for all at all ages	Not covered	Environmental Quality of Life
4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	Not covered	Socio-economic
5	Achieve gender equality and empower all women and girls	Not covered	Not covered
6	Ensure availability and sustainable management of water and sanitation for all	Smart Living and Working	Natural Resource Base
7	Ensure access to affordable, reliable, sustainable and modern energy for all	Smart Living and Working	Resource Productivity
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Smart Enterprise	Socio-economic
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Smart Enterprise	Policy and Finance
10	Reduce inequality within and among countries	Not covered	Socio-economic
11	Make cities and human settlements inclusive, safe, resilient and sustainable	Smart Living and Working	Environmental Quality of Life
12	Ensure sustainable consumption and production patterns	Smart Agri-production	Socio-economic
13	Take urgent action to combat climate change and its impacts	Smart Living and Working	Resource Productivity
14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	Smart Agri-production Smart Ecosystems	Socio Economic
15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	Smart Ecosystems	Natural Resource Base Policy and Finance
16	Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels	Covered in all 'Green is Smart' drivers	Not covered
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	Not covered	Not covered

While there is significant alignment, some of the SDGs are not directly translatable to provincial level initiatives, and others fall outside of the scope of the green economy as a government programme area. South Africa is represented in global deliberations pertaining to the goals and will be required to report on progress against their achievement. The Climate Change agreements that were concluded at the COP21 in December 2015, are integral to realising low carbon economic growth and climate change resilience that are critical to the achievement SDGs.

## 2.2 SOUTH AFRICA

In 2014, the National Cabinet approved the new *Medium Term Strategic Framework* (MTSF) for 2014 to 2019 as the national implementation framework for the *National Development Plan* (NDP), which is the overarching development vision and strategic framework for South Africa. The framework defines the strategic objectives and targets of government over a five-year term. These objectives pick up on many key green economy issues: job creation; skills development and infrastructure; sustainable human settlements; and rural development.

The National Strategy for Sustainable Development 2009-2014 (NSSD1) is currently being updated. For the five-year term for which it was applicable, it was the guiding sustainability policy and included *Working Towards the Green Economy* as one of its five priority areas. As a national priority, the green economy is overseen by the Department of Environmental Affairs (DEA). UNEP has worked closely with DEA on modelling the impacts of a transition to a low-carbon and sustainable economy in priority sectors, as well as on strategy development. DEA has identified nine green economy strategic focus areas. A mapping exercise was carried out in the last quarter of 2013/14 to ensure that the WCG's Western Cape Green Economy Indicators and strategic priorities are aligned to national priorities.



TABLE 2:

## SOUTH AFRICAN NATIONAL GREEN ECONOMY STRATEGY ALIGNMENT

FOCUS AREA	DESCRIPTION	ALIGNMENT WITH 'GREEN IS SMART'	ALIGNMENT WITH WCG GREEN ECONOMY INDICATORS
1	<b>Green buildings and the built environment</b> <ul style="list-style-type: none"> <li>Greening private and public buildings</li> </ul>	Smart Living and Working	Not covered (see Western Cape Government Annual Property Efficiency Report)
2	<b>Sustainable transport and infrastructure</b> <ul style="list-style-type: none"> <li>Promoting non-motorised transport</li> </ul>	Smart Living and Working Smart Mobility	Environmental Quality of Life
3	<b>Clean energy and energy efficiency</b> <ul style="list-style-type: none"> <li>Expanding off-grid options in rural and urban communities</li> <li>REFIT (Renewable Energy Feed-in Tariff) optimisation for large scale renewable and localisation and</li> <li>Up-scaling Solar Water Heater rollout</li> </ul>	Smart Living and Working	Resource Productivity
4	<b>Resource conservation and management</b> <ul style="list-style-type: none"> <li>National payments for ecosystem services</li> <li>Up-scale "Working for" programmes (for example Working for Water)</li> <li>Infrastructure resilience and ecosystems</li> <li>Offset programme</li> <li>Wildlife management</li> </ul>	Smart Ecosystems	Policy and Finance
5	<b>Sustainable waste management practices</b> <ul style="list-style-type: none"> <li>Waste beneficiation</li> <li>Zero waste community programme for 500 000 households</li> </ul>	Smart Living and Working	Resource Productivity
6	<b>Agriculture, food production and forestry</b> <ul style="list-style-type: none"> <li>Integrated sustainable agricultural production</li> </ul>	Smart Agri-production	Socio-economic
7	<b>Water management</b> <ul style="list-style-type: none"> <li>Water harvesting</li> <li>Alternative technology for effluent management</li> <li>Comprehensive municipal water metering (Demand side management)</li> <li>Reduce water losses in agriculture, municipalities and mining</li> </ul>	Smart Living and Working	Resource Productivity Natural Resource Base
8	<b>Sustainable consumption and production</b> <ul style="list-style-type: none"> <li>Industry specific production methods</li> <li>Industrial production technology changes</li> </ul>	Smart Agri-production	Socio-Economic Environmental Quality of Life
9	<b>Environmental sustainability</b> <ul style="list-style-type: none"> <li>Greening large events and legacy (COP17 and Tourism)</li> <li>Research, awareness and skills development and knowledge management</li> </ul>	All	All

National Government has identified the following enablers of the Green Economy: regulatory framework; market-based instruments; innovation, science and technology commercialisation, greater localisation and manufacturing; investment, finance opportunities and financing instruments include leveraging of funds; availability of skills; institutional capabilities and capacity and partnerships. In the Western Cape, these are picked up in the *Green is Smart* Green Economy Strategy Framework, where identified enablers include: finance; capabilities; knowledge and innovation; rules and regulation; and infrastructure.

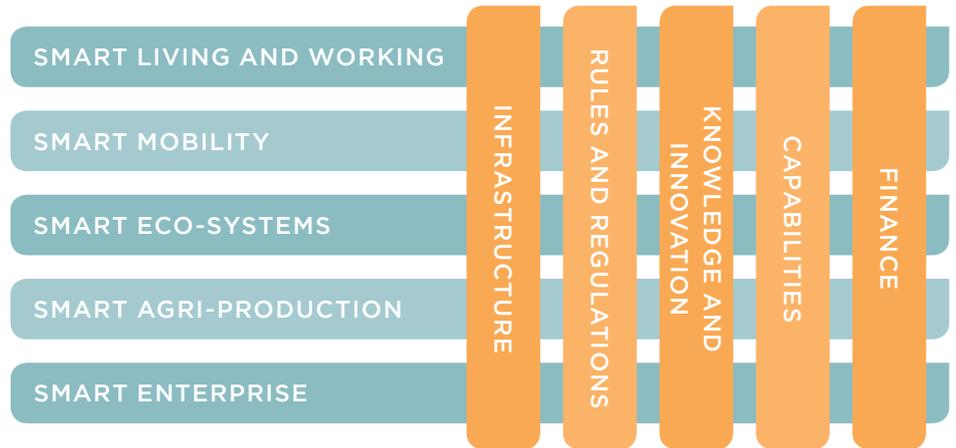


FIGURE 1: THE GREEN IS SMART DRIVERS AND ENABLERS

TABLE 3:

## UPDATE ON GREEN ECONOMY INITIATIVES IN OTHER PROVINCES

<b>Gauteng</b>	The provincial strategy for a developmental green economy was finalised in 2010. The strategy responded to trends across many cities, city-regions and other similar areas had begun investing heavily in green technologies, creating green jobs, and were preparing for a post economic crisis environment where sustainable, low-carbon, economic growth (in the form of low carbon economies, increased green jobs and enhanced quality of life) becomes the new business as usual (Gauteng Province Department of Economic Development, 2010).
<b>Free State</b>	In 2014, the Department of Economic Detvelopment, Tourism and Environmental Affairs (DETEA) published the Free State Green Economy Strategy to support the province in developmental areas which include, inter alia: improving environmental quality and economic growth; developing green industries; expanding productive capacity and service delivery; and adopting sustainable consumption and production processes (Free State Provincial Government Department of Economic Development, Tourism and Environmental Affairs, 2014).
<b>KwaZulu Natal</b>	KwaZulu-Natal: In 2012 KwaZulu-Natal's Department of Economic Development and Tourism published its green economy strategy with the principal aim of supporting and directing the re-orientation and growth of the province's economy to become increasingly competitive and resilient, and to reduce poverty, create sustainable jobs for local citizens, and address social equity throughout the province (Province of KwaZulu Natal Department of Economic Development and Tourism, nd).
<b>Limpopo</b>	In June 2013 the Limpopo Province's Green Economy Plan - Including Provincial Climate Response was published. The Plan identifies short, medium and long-term green economy goals for the province: <b>Short-term:</b> Generate jobs; Improve environmental quality <b>Medium term:</b> Create enabling conditions for green growth; Change behavioural and production patterns <b>Long-term:</b> Build a new economic/ environmental paradigm for Limpopo (Limpopo Provincial Government Department of Economic Development, Environment and Tourism, 2013).
<b>North West</b>	The North West Renewable Energy Strategy and Implementation Plan (2013) focuses on promoting solar PV and SWH in the province. It functions as the Province's Green Economy strategy, with links to climate change mitigation, energy poverty alleviation, and green economic and employment development (North West Province Department of Economic Development, Environment, Conservation and Tourism, 2012).

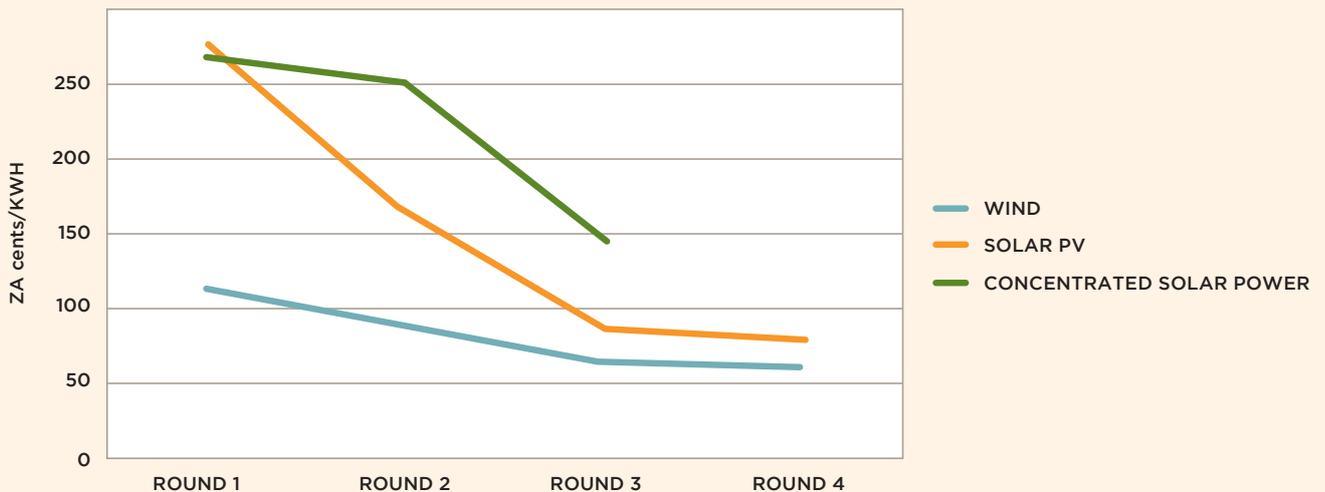
## BOX 1: UPDATE ON THE RENEWABLE ENERGY INDEPENDENT POWER PRODUCER PROCUREMENT PROGRAMME (REIPPPP)

Approximately ZAR120 billion has been allocated to renewable energy projects in South Africa to date (WWF, 2014). In terms of utility-scale energy generation, the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP) is one of the main entry points into the renewable energy market. Since its inception in 2011, REIPPPP has procured over 5 000 MW of generation capacity (GreenCape, 2015).

The Western Cape has attracted significant investment to the province through this programme. As of the end of 2014, 421.82MW of electricity is generated annually in the Western Cape from renewables, of which 142.22MW is fed into the grid. This investment has contributed to employment and skills development in the Western Cape. It has also led to the establishment of new manufacturing plants.

Encouragingly projects in the first round of REIPPPP were on average 70% more expensive than those in the third round (GreenCape, 2015). Furthermore, a study conducted by the Council of Scientific and Industrial Research (CSIR) reported that the financial value added by renewables to the South African economy in terms of fuel savings and macroeconomic value in 2014 was ZAR5.3 billion (CSIR, 2015). This figure is derived from combining the cost savings from substituting renewables for coal and diesel, with the averted costs of avoided hours of unserved energy.

GreenCape as a special purpose vehicle of the WCG continues to provide support to the industry.





# Western Cape Government Strategy Update

SOURCE: ©GreenCape. Images reproduced with permission from GreenCape

## 3.1 GREEN IS SMART UPDATE

After two years of implementation, via a formal interdepartmental Green Economy Steering Committee, green economy projects are being mainstreamed into departmental budgets and reporting lines. Forums for cross-functional exchange are still used to ensure that collaborative problem solving continues. Priorities in the green economy have been pulled into the transversal management structure under the new Provincial Strategic Plan (see Section 4.2). WCG Departments and the WCG special purpose vehicles and public entities, GreenCape and CapeNature, continue to focus on green economy projects specific to their mandate, as well as play advisory roles within government, as required.

The 2014/15 green economy project plans built on the learnings of 2013/14, in order to continue to refine the role of provincial government in this area. The green economy's place as a strategic priority was solidified within the Provincial Strategic Plan 2014-2019. Work is expected to be consolidated and extended in coming years. The Departments that have been directly involved in developing this portfolio are Environmental Affairs and Development Planning, Economic Development and Tourism, Agriculture, Human Settlements and Transport and Public Works.

TABLE 4:

## GREEN ECONOMY ENABLERS - OPPORTUNITIES TO DRIVE GREEN GROWTH

<b>Infrastructure</b>	The South African Government committed to investing R827 billion in infrastructure over three years from 2013/2014. Opportunities to develop resilient, sustainable infrastructure are available in the renewable energy, natural gas, water and ICT sectors.
<b>Rules and Regulations</b>	The opportunity exists for Western Cape Government to improve the ease of doing business, while promoting behaviour change, through measures such as incentives and disincentives, carbon pricing, and green procurement (sustainable public procurement).
<b>Knowledge and Innovation</b>	A knowledge hub that coordinates existing data from government, universities and the private sector, providing information on market and environmental trends, baseline data and stakeholder databases creates the opportunity for a centralised shared knowledge management system
<b>Capabilities</b>	A coordinated green skills development strategy is required that will enable the up-skilling and retraining of the future workforce, especially of the economically vulnerable. Given, that the Western Cape has strength in the quality of its learning institutions, these need to be leveraged to ensure we have sufficient and appropriate skills.
<b>Finance and Investment</b>	The Western Cape has the opportunity to position itself as a pioneer in green financial innovation and risk management. The province's strength as a financial asset management centre, along with its expanding pool of green professionals provides a strong base for its development as a green finance centre.

GreenCape is tasked to unlock opportunities for growth and job creation in the green economy. It focuses primarily on economic opportunities related to energy, water, and waste, and has four sector desks covering the built environment, renewable energy, waste and water. These sector desks aim to facilitate improved resource efficiency and competitive advantage for industry in the Western Cape by interfacing between stakeholders in companies, academia and government.

A Green Economy Working Group with public sector, non-profit and private sector participation provided the opportunity for exchange and debate with a broader audience. This platform was used to exchange ideas and act as a sounding board for new projects.



SOURCE: Western Cape Government Department of Agriculture

### 3.2 NEW PROVINCIAL STRATEGIC PLAN

The *Provincial Strategic Plan (PSP) 2014 - 2019* outlines both the policy agenda and strategic roadmap for Western Cape Government (Western Cape Government, 2015). It builds on the previous PSP 2009 -2014, and incorporates an interdepartmental (transversal) management approach, directed by five overarching Provincial Strategic Goals (PSGs).

#### PROVINCIAL STRATEGIC GOALS



FIGURE 2: PROVINCIAL STRATEGIC GOALS 2014-2019

### 3.3 GAME CHANGERS

For each of the Provincial Strategic Goals, the PSP introduces a number of ‘game-changers’. These are projects and programmes to catalyse the achievement of each goal.

	Description	Key Performance Indicator
Energy Security	Driving the uptake of small-scale embedded generation (rooftop solar PV) by businesses and households, together with enhanced energy efficiency, to achieve energy security in the Western Cape	10% reduction in current Western Cape demand from Eskom in the next 2 years, generated through alternative low carbon supply and energy efficiency measures Target: 260MW
Vocational and Technical Skills	Boosting skills development in the three economic sectors identified as having the highest potential for new jobs - namely, agri-processing, tourism, and oil and gas servicing	<ul style="list-style-type: none"> <li>• Increase in applications to Technical Vocational Education and Training (TVET) colleges for 16 priority trades</li> <li>• 80% through-put of artisans in TVET colleges</li> <li>• 80% employment of qualified artisans</li> </ul>
After-school	Creating real after-school opportunities for young people to participate in sport, cultural and academic activities	<ul style="list-style-type: none"> <li>• Regular and sustained participation in after-school activities which contributes towards positive youth development:</li> <li>• 112 600 (20%) of no fee learners have access to quality after school programmes</li> </ul>
e-learning	Testing <b>effective</b> e-learning models in our schools	Still in development
Alcohol Harms Reduction: Community Based Intervention and RBT	Tackling alcohol abuse and addressing road safety through targeted Random Breathalyser Testing (RBT)	RBT: 30% reduction in alcohol related motorist fatalities over 3 years Community Based Intervention: 20% reduction in violent crime reported <ul style="list-style-type: none"> <li>• 20% reduction in alcohol-related injuries and fatalities In Gunya, Khayelitsha &amp; Paarl East over 3 years</li> <li>• Neighbourhood Watch (NWH) accreditation province-wide in 3 years</li> </ul>
Sanitation	Providing water and decent sanitation that exceeds the basic national minimum standard	Still in development
Better Living Model	Pioneering an integrated living model that can pave the way for restructuring the apartheid legacy of our cities and towns	Redevelop the former Conradie Hospital Site with a replicable Better Living Model of mixed-income multi-use residentially-led development that will address apartheid legacies and spatial planning practices
Broadband	Delivering high-speed broadband across the province:	Stream 1: Provision of Broadband to all Government Sites: Over 1950 sites to be connected in total which consists of: <ul style="list-style-type: none"> <li>• Approx. 1286 Schools</li> <li>• Approx. 298 Healthcare facilities</li> <li>• Approx. 413 Other Govt. offices</li> </ul> Stream 2: Broadband for the Economy <ul style="list-style-type: none"> <li>• Broadband is used by 70% of WC population by 2019</li> </ul> Stream 3: Transversal Applications Stream 4: Sector specific Initiatives

### 3.4 LINKS TO OTHER WCG WORK

The projects that are managed under the ‘green economy’ are not the sum of WCG’s work undertaken to support greening and new green economic opportunities in the Western Cape. A flagship example has been selected and is described below for each of the strategic work areas to demonstrate the range of work being undertaken.

## 2014/15 Areas of Work that support the transition to a green economy

<b>Smart living and working</b>	<p><b>Feasibility Study for Alternative and Sustainable Infrastructure and Services for Settlements</b></p> <p>To conduct a feasibility study on alternative technologies for municipal infrastructure and services for two development sites in Swartland Mossel Bay Municipalities. Outcomes: Concept plans for sustainable settlements on the two identified sites will be produced as well as cost-benefit and risk-benefit analyses for the implementation and operation of the proposed concept plans, including all municipal responsibilities and taking into account the MFMA and other government fiscal controls. A financial analysis of alternative financial models, which include private sector involvement, will also be done.</p>
<b>Smart Mobility</b>	<p><b>GoGeorge Integrated Public Transport Project</b></p> <p>Projects illustrates how a Public Private Partnership (PPP) can foster implementation of a public transport service that is provided with a fleet of buses that is reliable, accessible, safe, and affordable for the people of George. GO GEORGE is the result of a partnership between the George Municipality, the Western Cape Government, the national Department of Transport and local taxi and bus operators from the George area. Branded GO GEORGE buses are operational across the city of George and will later also connects neighbouring towns. The aim is to make sure that more people have access to a more affordable form of transport that enables them to access a wider range of socio-economic opportunities. Public transport is kinder to the environment, and is more cost effective than operating a private vehicle, reduces traffic congestion and delays the need to upgrade the capacity of the existing road infrastructure.</p>
<b>Smart Ecosystems</b>	<p><b>Riparian Rehabilitation Project</b></p> <p>To invest in the establishment of ecological infrastructure for the rehabilitation of areas cleared of invasive alien vegetation within and along both the Berg and Breede Rivers. The project aims to develop capacity and skills amongst rural communities through the Expanded Public Works Programme, by providing job creation opportunities linked to the activities of the project. All species used are harvested from the respective catchments to maintain genetic diversity, with the objective of restoring biological diversity to cleared areas for the establishment of ecosystem services related to riparian areas, which includes bank stabilization, flood attenuation and active buffer zones to land use practices along the river. In doing so, the project advocates for resilience, capacity and adaptation measures to climate change pressures, and the promotion of a greater sense of stewardship among riparian land owners for improved sustainable land management practices.</p>
<b>Smart Agri-production</b>	<p><b>Agri Desk</b></p> <p>To support the uptake of sustainable practises in the agricultural sector, with particular emphasis on improvements in energy efficiency and the use of renewable energy within the sector, highlighting the potential for water treatment and re-use. It also aims to promote the utilisation of waste within the agriculture and agri-processing sectors. The project aims to be a one-stop portal for all farmers, researchers, private as well as non-governmental agencies interested in sustainable agricultural practices, initiatives and research and getting involved in the green economy space. The portal will also allow for industry participants to communicate on all agricultural matters and by so doing allow greater awareness and understanding of environmentally-friendly agricultural practices and the green economy space in the Western Cape.</p>
<b>Smart Enterprise</b>	<p><b>Agricultural Economics Services: Market Demand for Solar PV</b></p> <p>To provide an overview of solar PV market in South Africa focusing on agriculture. To determine future market demand for solar PV in agriculture and identify key factors that inform decision to install solar PV in fruit and wine sectors, with a particular focus on role of finance.</p>

### 3.5 POLICY AND INVESTMENT

Developing a green economy requires decoupling resource use and environmental impact from economic growth. The transition to a greener growth path requires financial resources and instruments that enable investment and the development of green businesses. The financial sector plays an important role in incentivising this transition, by costing environmental risk and allocating resources towards low-carbon and environmentally sound investments.

Transitioning to green growth can lead to efficiency and productivity gains. While the overall costs of green growth paths may be lower than conventional growth paths, the adoption of more efficient technologies and practices will require upfront investment. There are often challenges in accessing long-term finance that accommodates payback periods, especially for larger infrastructure. Without this longer term view, it is difficult to make the business case for green procurement and investment.

The financing for green growth will come through the conventional bank financing instruments as well as from country budgets and private sector investments. The green economy will benefit from increasing innovation in responsible and impact investment instruments.

WCG finance-related projects for 2014/15 include: Eco-Invest, Investment Mapping, and a Green Finance desk at GreenCape. Within these projects, viable opportunities for investment in environmental goods and services with attractive returns are to be distilled over three years, identifying and piloting the strongest of these opportunities in consultation with private sector stakeholders.

### 3.6 GREEN ECONOMY COMMUNICATIONS

110% Green is the public-facing brand for the WCG green economy. WCG launched 110% Green on World Environment Day 2012 to build awareness in order to drive action in the green economy. The 110% Green website features initiatives by those organisations trying to mainstream resource efficiency and green innovation. 110% Green invites businesses, non-profit organisations and government entities to commit to contributing to the green economy through setting environmental targets and supporting green innovations.

#### BOX 2: SUSTAINABLE PUBLIC PROCUREMENT

The United Nations Environment Programme (UNEP) defines Sustainable Public Procurement (SPP) as **“a process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organisation, but also to society and the economy, whilst minimising damage to the environment”** (United Nations Environment Programme, 2015). A sustainable procurement choice is one that accounts for the full value of a service or product over its whole lifecycle, including costing of social and environmental risk and opportunities.

#### SUSTAINABLE PUBLIC PROCUREMENT = PRICE + QUALITY + ENVIRONMENT + SOCIETY + ECONOMY

A study undertaken by the International Institute for Sustainable Development (IISD), “Implementing Sustainable Public Procurement in South Africa: Where to start” indicated that South Africa’s legislative and regulatory environment was suitably accommodating of this approach (Turley & Perera, 2014). With government spending accounting for approximately 29% of Gross Domestic Product, the opportunity to use this buying power to drive and support resource efficiency, local manufacturing, and socially and environmentally responsible practices in the economy is significant. The Preferential Procurement Policy Framework Act (2000) and Broad-Based Black Economic Empowerment (BBBEE) Code (2014) have already set a precedent for this kind of use for procurement in South Africa.

Globally, the UNEP 10 Year Framework of Programmes on Sustainable Consumption and Production Patterns (10YFP) was adopted at Rio+20 in June 2012 to enhance international cooperation to accelerate the shift towards sustainable consumption and production (SCP). Aiming to augment working at national and regional levels, and in developed and developing countries, 10YFP has six programmatic areas of focus, of which sustainable public procurement is one.

Together with the IISD and WWFSA, the DEADP Directorate: Sustainability made a success application for funding under the UNEP 10YFP SPP programme. The partnership with the IISD will work towards the following goals, focusing specifically on the green component of SPP:

1. Address public accounting hurdles faced when implementing SPP;
2. Ensure that SPP tools and practices respond to the Province’s, and South Africa’s, green growth and sustainable development goals; and
3. Contribute toward achieving value for money for public spending across asset life cycles.

This project will draw on existing SPP tools and global good practice, as well as local and global expertise to develop a locally appropriate set of practical materials that allow for the implementation of SPP.

# Western Cape Green Economy Indicators



This is the second annual report on the Western Cape Green Economy Indicators. As intended, these indicators are evolving in order to match shifting data availability, while striving to provide the most strategic year-on-year data. The indicators fall into five categories, which are presented in the following order:

1. Natural asset base
2. Resource Productivity
3. Socio-economic context for Green Growth
4. Environmental Health and Inclusivity
5. Policy and Investment

With only two (or in some cases one) years of available data, it is not yet possible to begin to infer any trends. However, the increase in energy produced from renewables by IPPs in the province, from 133.40 MW in 2012 to 421.82 MW in 2013, is encouraging. Another noticeable improvement over the same time period, was the increase in the output and value of the aquaculture sector. For the Western Cape agriculture sector as a whole, however, there was a decline in the share of agricultural exports as a percentage of total export, from 49% in 2012 to 35.38% in 2013.

**Notes on indicators:** further information on indicator definition, sources and amendments is available in Appendix 1 in Section 8.



TABLE 5:

## THE WESTERN CAPE GOVERNMENT GREEN ECONOMY INDICATORS 2015

Indicator Category	Indicator Focus	Indicator	2012 Value	Unit	2013 Value	Unit
Natural Resource Base	Carbon	% Change in energy sector emissions against 2009 baseline	-12.00	%	Data reported on biennially. No data for 2013.	%
	Land	Agricultural land improved through conservation measures annually	27,359.00	ha	29,076.00	ha
	Water	Total water supply versus total water demand	Supply: 596,000,000.00 Demand: 510,210,000.00*	m <sup>3</sup>	Supply: 596,000,000.00 Demand: 508,100,000.00	m <sup>3</sup>
Resource Productivity	Carbon	Carbon emissions for energy sector	36,345,753.00	t CO <sub>2</sub> e	Data reported on biennially. No data for 2013.	t CO <sub>2</sub> e
	Carbon	Carbon emissions per unit GDP	128.59	t CO <sub>2</sub> e/ million units GDP ***	Data reported on biennially. No data for 2013.	t CO <sub>2</sub> e/ million units GDP ***
	Energy	Total energy consumption	276,333,250.00	GJ	Data reported on biennially. No data for 2013.	GJ
	Energy	Energy consumption by sector	Industry: 85,383,982.29 Transport: 146,296,369.73 Agriculture: 6,968,221.23 Commerce and Public Services: 10,921,301.41 Local Government: 2,111,886. Residential: 24,652,304.95	GJ	Data reported on biennially. No data for 2013.	GJ
	Energy	Energy consumption per unit GDP	977.65***	GJ/ million units GDP	Data reported on biennially. No data for 2013.	GJ/ million units GDP
	Energy	Energy consumption per capita	52.14***	GJ/ capita	Data reported on biennially. No data for 2013.	GJ/ capita
	Energy	Total energy produced from renewable sources by independent power producers	133.40	MW	421.82	MW
	Waste	Municipal solid waste generated annually	3,807,765.00	t	No data available	t
	Waste	% Waste diverted from landfill annually	9.0	%	No data available	%
	Water	Green Drop score	84.5	%	Data reported on biennially. No data for 2013.	%

Indicator Category	Indicator Focus	Indicator	2012 Value	Unit	2013 Value	Unit
Socio-economic	Broadband Connectivity	% Households with access to broadband connection	54.3	%	<b>54.40</b>	%
	Skills	% Students in science and engineering faculties	40.4	%	<b>41.00</b>	%
	Sustainable Agriculture	% Share of agricultural and agri-processing exports to total exports	49.0	%	<b>35.38</b>	%
	Aquaculture	Total value of aquaculture sector	405	ZAR million	<b>538.56</b>	ZAR million
	Aquaculture	Annual tonnage produced by aquaculture	2,574.00	t	<b>No data available</b>	t
Environmental Quality of Life	Carbon	Modal split for passenger transport	<b>Private transport:</b> 52.0 <b>Public transport:</b> 48.0	%	<b>Private transport:</b> 52.0 <b>Public transport:</b> 48.0	%
	Carbon	% Volume of land freight haulage by rail****	N1: 3.2 N2: 0.9 N7: 3.4	% of total volume	<b>N1: 45.2</b> <b>N2: 4.1</b> <b>N7: 0.0</b>	% of total tonnage
	Energy	% Households with access to energy	90.5	%	<b>89.30</b>	%
	Health	% Households with measure of food insecurity	21.3	%	<b>22.70</b>	%
	Health	% Households with access to sanitation	95.6	%	<b>94.80</b>	%
Policy and Finance	Biodiversity	% Land under conservation	6.4	%	<b>6.54</b>	%
	Energy	Annual value of renewable energy projects financed by national and international green/climate funds.	3,220.00	ZAR million	<b>8,024.00</b>	ZAR million
	Aquaculture	Annual value of capital investment in aquaculture**	-	ZAR million	<b>241.00</b>	ZAR million

#### Notes

Three indicators from the previous report's set have been dropped due to the unavailability of data going forward. These are : Loss of economic value from estuaries to fisheries; Total water use per unit GDP per sector; and Total value of public investment in green infrastructure.

\* 2012 value has been adjusted on the recommendation of the author of the source document

\*\* 2012 data has been removed due to quality issues

\*\*\* Unit of measurement has been changed to conform to national reporting practices

\*\*\*\* Unit of measurement has been changed in line with changes in Transnet's reporting practices

#### Abbreviations

ZAR million	Millions of South African Rand
t CO2e	Tonnes of carbon dioxide equivalent
m3	Cubic metres
GJ	Gigajoules
MJ	Megajoules
GDP	Gross domestic product
t	Tonnes
ha	Hectares
MW	Megawatts



## Review of Green Economy opportunities and challenges in the Western Cape

SOURCE: Western Cape Government Department of Agriculture

Social and economic development depends on robust functional natural systems. The state of the Western Cape's environment requires focused attention, not only from a conservation perspective, but also because of the financial and more broadly economic consequences for the attainment of our developmental objectives. The *Western Cape State of the Environment Outlook Report* indicated that most natural systems are under significant pressure (Western Cape Government Department of Environmental Affairs and Development Planning, 2013). This includes land, inland water, biodiversity, and oceans and coasts. Climate change was also reported to have significant biophysical and economic risks to the province. This is particularly pertinent for agricultural production.

Four of the top ten risks to the global economy identified by the World Economic Forum in 2014 are related to natural systems (World Economic Forum, 2015). Climate change is an additional stressor that amplifies already existing societal risks such as water, energy and food crises, and has the potential to undermine already hard-won development gains.

TABLE 5:

### WORLD ECONOMIC FORUM GLOBAL RISKS REPORT 2015 TOP TEN RISKS

1	Interstate conflict
2	<b>Extreme weather events</b>
3	Failure of national governance
4	State collapse or crisis
5	Unemployment or underemployment
6	<b>Natural catastrophes</b>
7	<b>Failure of climate change adaptation</b>
8	<b>Water crises</b>
9	Data fraud or theft
10	Cyber attacks

## 5.1 ENERGY AND CARBON EMISSIONS

Internationally, fossil fuel consumption and carbon emissions continue to rise, posing significant threats to economic growth, social development and natural resource bases. Nationally, South Africa has committed to reducing Greenhouse Gas (GHG) Emissions<sup>1</sup>. These clear intentions to decouple economic growth from growth in consumption of carbon fossil fuels, and move towards a low carbon economy, are supported by the Western Cape Government's Climate Change Response Strategy (2014). Furthermore, as our GHG emissions continue to rise as a result of lagging emissions reductions. South Africa, and in particular the Western Cape, is already facing climatic variability and an increasing frequency in associated disasters (such as floods, droughts, fire frequency, storm surges, extreme temperatures, hail, etc.). Key economic sectors in the Western Cape, including agriculture and tourism, are already at risk and government investments into infrastructure are at risk from climate related disasters. Losses associated with direct damage from weather related events between 2003 and 2008 in the Western Cape amounted to over R3 billion. As a result, WCG is taking the lead developing long-term climate change responses across economic sectors, through the Climate Change Response Strategy and, additionally, in developing sector specific climate responses such as the SmartAgri Climate Response Strategy (in development 2015).

National constraints on energy supply capacity have recently accelerated the introduction of a national programme to facilitate private generation from renewable sources into our energy mix (see Box 2). At the same time, many companies and some households are generating energy for their own consumption, most using available solar PV technologies. Local governments are aiming to facilitate and support such initiatives, although there are many regulatory, financial and governance challenges that must still be negotiated. The City of Cape Town, for example, has entered into its first small-scale embedded energy generation agreement with the Black River Parkway, which has connected its solar PV plant to the City's grid. Similar initiatives are being sought across local governments in the Western Cape. Beyond energy, municipalities are also developing numerous initiatives to adapt to climate change and prepare for increasing frequency of climate related disasters.



SOURCE: ©GreenCape. Images reproduced with permission from GreenCape

<sup>1</sup> South Africa is a signatory to the Kyoto Protocol and a Party to the United Nations Framework Convention on Climate Change (UNFCCC) and has indicated this intention through both the National Development Plan (NDP), the Integrated Resource Plan (IRP), and the National Climate Change Response White Paper (and the soon to be published Intended Nationally Determined Contribution to the UNFCCC) among others.

With its own property portfolio, WCG is undertaking energy efficiency programmes; increasing green standards of buildings to equate to GBCCSA standards; and greening provincial hospitals, clinics and schools.

### **BOX 3: WESTERN CAPE INDUSTRIAL SYMBIOSIS (WISP)**

The Western Cape Industrial Symbiosis Programme (WISP) is a service, which is sponsored by WCG, that connects companies, allowing them to identify mutually beneficial relationships resulting in business opportunities. The Industrial symbiosis approach enables unused or residual resources that may be seen as waste (materials, energy, water, assets, logistics, and expertise) by some organisations, to be exploited by other businesses, enhancing profitability and sustainability.

Based on the United Kingdom's National Industrial Symbiosis Programme (NISP), and supported by International Synergies Limited (ISL) - a world leader in industrial symbiosis - the programme is funded by WCG through the green economy, as well as by the British High Commission Prosperity Fund. WISP is especially beneficial to small and medium-sized enterprises (SMEs) that are typically unable to allocate sufficient time and expertise to strategic resource optimisation.

While the programme is managed by GreenCape, a working group consisting of the ISL, National Cleaner Production Centre (NCPC) and the KZN Department of Economic Development, Tourism and Environmental Affairs (DEDTEA) was setup during 2014/2015 in order to launch a South African National Industrial Symbiosis Programme.

WISP works with a broad range of industries and companies of various sizes. No company is too big or too small to benefit from WISP and membership is free, regardless of sector, size or turnover. Since its launch in April 2013, the programme has achieved the following:

- Current membership has grown to over 250 companies
- Achieved a total cost savings of R3.6 million and a total of R3.9 million for membership companies
- A total of 394 tonnes of waste diverted from landfill
- Created 11 permanent direct jobs and 10 temporary direct jobs
- Over 1000 under-utilised resources identified

## 5.2 WATER AND SANITATION



SOURCE: Western Cape Government Department of Agriculture

Ensuring sufficient water availability and quality for development is an ongoing challenge for the water-stressed Western Cape. It will be increasingly difficult as the population increases, and with the future anticipated increases in climate variability. Fortunately, there are already innovative solutions in place that bring public and private stakeholders together to facilitate joint solutions. A flagship example is the Berg River Improvement Plan (BRIP). BRIP is a WCG interdepartmental plan to address the nexus of ecological, social and economic challenges that are connected to poor water quality in the Berg River system. This plan was a WCG response to the 2009 recommendations of the Berg River Water Quality Task Team management by the National DWS.

Managed by DEADP, BRIP was signed off in September 2012, with inputs from and responsibilities assigned to DEADP, DoA, the Department of Local Government (DLG), the Department of Human Settlements (DHS) and the Department of Economic Development and Tourism (DEDAT). BRIP aims to consolidate work undertaken by municipalities and the aforementioned WCG sector departments over the short term (five years) and long term (up to thirty years) to result in: “a Water Stewardship Programme for the Berg River catchment to change the lives of people through the implementation of simple interventions” (Western Cape Government, 2012).

The project promotes green jobs, supports agriculture (a green economy priority sector) and fosters inclusive access to natural resources, notably, clean water. BRIP was designed to complement the Department of Water Affairs’ (now Department of Water and Sanitation) mandate for water conservation and water management interventions in the area. BRIP has three objectives:

1. To reduce environmental impacts of municipal urban areas, particularly informal settlements and wastewater treatment works
2. To reduce the negative impact of agriculture on water resources
3. To ensure sustainable resource use and ecological integrity

BRIP's planning and implementation relies on a distributed network of actors, all working towards the same overarching goals. The programme's work and outcomes responds to the nexus of interconnected risks and opportunities concerning food security, water, energy and biodiversity. The BRIP approach has been highlighted as a potential pilot model for a "nexus implementation" methodology that can be replicated in other regions (Midgley, New, & Spelman, 2014). Unlike many other environmental programmes, BRIP is managed in the context of socio-economic development interventions and as a consequence, it is positioned to actively support economic growth and employment.

BRIP incorporates Expanded Public Works Programme (EPWP) opportunities (Western Cape Government, 2012). The EPWP component of BRIP was initiated in 2013, focusing on the rehabilitation of riparian buffer zones and wetlands, through the re-establishment of indigenous flora. The BRIP EPWP programme began on a small scale, with an emphasis on cost-effective environmental management. The first two years have focused on transferring appropriate practical skills to consolidated EPWP teams (41 employees in 2014) and management staff.

Based on the effective coordination of BRIP, the identification of other green economy projects in this region was proposed, allowing for the crowding in of effective environmental and socio-economic interventions within a focused geographical area. One example of this kind of initiative is the Genius of Space project which has been initiated in Stellenbosch Municipality (Stellenbosch Municipality, 2014). See Table 6 for detail.

In early 2015, under the new Provincial Strategic Plan (2014-2019), Water and sanitation related projects have been consolidated under a 'game changer' programme, requiring the coordination of water-related planning, resources and projects, including BRIP. BRIP also has links with the agro-processing 'game changer' project. The DEADP Strategic 5 Year plan identifies the intention to roll out the BRIP approach to the Olifants Doring and Breede Catchments as financial resources come available.



SOURCE: Western Cape Government Department of Agriculture

#### **BOX 4: GENIUS OF SPACE**

The Genius of Place project was initiated in collaboration with the Berg River Improvement Plan (BRIP), after it was found that the informal settlements along the Berg River were the main contributors to the river's pollution. The aim of the project is to identify and address specific water and sanitation challenges in the Langrug informal settlement, using principles of biomimicry.

The project has developed prototype systems that filter wastewater through a series of wetlands with different communities of endemic and indigenous organisms and aquatic plants. The aim is also to have a communal solid waste system that involves collection, separation and treatment.

Significant research was conducted for the development of four prototypes that are to be piloted. Now in its third phase, the project has undertaken significant community and municipal engagement in order to obtain buy-in and support and to identify the most appropriate locations within in the settlement to test the four prototypes.

A feasibility study was undertaken to explore the viability of business opportunities associated with the development of these waste-water treatment systems. The study also investigated funding models for the prototypes that were developed.

The Genius of Place project has now been combined with the Langrug Systems for People's Access to a Clean Environment (SPACE) project. The new Genius of Space project represents a joint effort between DEADP, DEDAT and Human Settlements in striving for innovative solutions to managing waste flows within human settlements, to improve living conditions, promote sustainable living and protect our natural resources.



### 5.3 BIODIVERSITY

South Africa is rich in biodiversity. The Western Cape has a particular abundance and variety of plant and animal life. The province is home to the Cape Floristic Region, which has more than 13,000 plant species. In addition to the intrinsic value of healthy ecosystems and impact on community wellness, there are also opportunities to use these resources responsibly for sustainable economic livelihoods and profitable businesses.

CapeNature is the organisation tasked with protection of our biodiversity resources within the province, and mandated to facilitate the attainment of conservation targets. The National Protected Area Expansion Strategy (PAES) 2010 strategy set a CapeNature expansion target of an additional 147 740 ha of land to be formally protected by 2015. By the start of 2015, an additional 124 106 ha, or 84% of the targeted expansion, was achieved. A significant portion of this can be attributed to the declaration of the Knersvlakte Nature Reserve. A further three Protected Area Management Agreements for nature reserves are awaiting declaration.

Conservation is often thought of as being at odds with the economy, setting up a false nature or development zero sum game. However, robust eco-systems provide important ecological infrastructure and ecosystems services required to sustain society as we know it. That includes communities as well as agriculture and industry. Given the socio-economic importance of biodiversity, the green economy presents an opportunity to reframe the relationship between development and conservation, in order to find strategic win-win solutions.

When it comes to development planning, it is not only integration between conservation and the economy that is needed. The integration of priorities and strategies of various levels of government is also required. CapeNature cannot achieve its conservation targets in isolation. The development of a Provincial Biodiversity Strategy and Action Plan (PBSAP) by the end

of 2016, presents the opportunity to unify the Western Cape Government, CapeNature, municipalities, private partners and the local community to work together to ensure that biodiversity in the province is optimally conserved. This brand of conservation includes equitable and sustainable use for business opportunities. A Draft PBSAP has been prepared and will go through a refinement process to ensure that it is aligned with the National Biodiversity Strategy and Action Plan (NBSAP) and the United Nations Convention on Biological Diversity (CBD) Strategic Plan for Biodiversity 2011-2020, and the Aichi Targets.

In line with WCG prioritisation of “Smart Ecosystems” in the *Green is Smart* strategy framework, WCG seeks to address this natural resource management challenge through two projects: Eco-Invest; and the CapeNature Income Generation in Protected Areas (Western Cape Government, 2013). Responding to global trends, both seek to build on examples of collaborative efforts to achieve environmental aims with significant financial returns on investment – more preferably, private investment – by valuing the ‘goods’ (e.g. harvested products) and ‘services’ (e.g. water purification and flood attenuation) provided by functional ecosystems (Barbier, 2007).

South Africa is the third most biologically diverse country in the world, and this mega-biodiversity presents significant income-generating opportunities. National government, through the National Biodiversity Economy Strategy (NBES) (currently in draft) is paving the way for the development of unique and viable business models for sustainable use of biodiversity assets, in which funds can be ploughed back into conservation. Models for public-private partnerships and other income-generating activities are already being trialled and implemented by CapeNature.

The NBES is currently focusing on two categories within a much wider spectrum of categories. The first includes initiatives to address country's wildlife sub-sectors and looks at sustainable business models for the sale of indigenous wildlife and game meat as well as managing the hunting industry. The second category encompasses bio-prospecting and developing models for the sustainable use of the country's rich flora for a wide range of products (medicinal, cosmetic, fragrances, extracts, essential oils, etc.). The Western Cape is particularly focused on this latter category, given the tourism, wild harvesting, cultivation and processing activities that are already in practice, and that can be expanded. Other priorities include carbon sequestration, alien invasive species management, estuarine and marine economy development, and the establishment of new biodiversity-related value chains.



SOURCE: Western Cape Government Department of Agriculture

## BOX 5: ECO-INVEST

The conservation of ecosystems and natural resources, while legally mandated, regularly faces a number of issues, including:

- Lack of resources to enforce legislation and pursue noncompliance;
- Tenuous public funding;
- Inadequate (largely financial) incentives for stakeholders such as private landowners; and
- Skewed distribution of risk/costs and benefits (Turpie et al., 2014; Western Cape Government DEADP, 2013).

The financial sustainability of conservation programmes threatens to undermine these efforts. Successful public-private eco-investments require that stakeholders are sufficiently mobilised around appropriate and complementary goals and incentives (Blignaut et al., 2008).

Responding to this challenge, within WCG's green economy programme, Eco-Invest is a project designed to investigate opportunities for investment in ecosystems goods and services with high returns, financial and otherwise. The project targets private investment and a blend of public and private capital. Building on other South African work, the project aims to attach an economic value to 'goods' (e.g. harvested products) and 'services' (e.g. water purification and flood attenuation) provided by functional ecosystems (Barbier, 2007; Blignaut et al., 2008).

There are plenty of precedents for the approach, but not many that are financially viable. Phase I of Eco-Invest (a pre-feasibility phase) identified four possible investment opportunities:

- Sustainable Financing for Estuary Management
- Energy Generation from Invasive Alien Plant Biomass
- Funding land restoration with Spekboom using Carbon Credits Trading
- Incentivising Fynbos restoration through Honeybush Cultivation and Agroforestry

While some of the Eco-Invest opportunities have been considered before, the context for these investments has shifted globally and locally. There are recent examples in the province of private sector, public sector and civil society actors working together to achieve shared benefits that make financial sense in the green economy (Turpie et al., 2014).

After further research and refinement, Phase II produced a menu of four viable investment opportunities, which are:

1. Sustainable and equitable financing of Estuary Management.
2. Funding degraded landscape restoration using Spekboom using Carbon Credit trading.
3. Promoting the development of biomass to energy industries, value-added alien wood enterprises, and restoration of landscapes cleared of alien plants, through trading alien plant biomass.
4. Developing the indigenous natural plant products sector.

From this menu of investment opportunities, the next step is to develop one or more to the next phase of business planning (Mander et al., 2015). This includes mobilisation of resources, brokering the required partnerships, and initiation of pilot projects in priority areas. Work under the Eco-Invest project will inform the development of the PBSAP.

## BOX 6: INCOME GENERATION IN PROTECTED AREAS

The Income Generation in Protected Areas project aims to develop a strategic plan to unlock revenue streams within, and around, CapeNature's protected areas. The investment case will determine the feasibility, viability and sustainability of various income generating opportunities.

The effects of climate change on the natural resources of the Western Cape are expected to have a significant impact on vulnerable economic sectors and communities within the province. A key challenge in overcoming this threat is securing sustainable funding streams for the conservation of the province's natural assets.

The project is comprised of three phases:

**Phase 1** – Final Progress Report and Income Generation Matrix (Completed)

**Phase 2** – Evaluation Report

**Phase 3** – Implementation of pilot projects

## 5.4 JOBS AND SKILLS



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From its beginning, political debates around the green economy in South Africa have centred on its employment creation potential. Attention was focused on investments in natural resource management, agriculture, emissions and pollution control, and transport, energy and energy efficiency (Borel-Saladin & Turok, 2013; UNEP, 2013).

The promise of 'green jobs' – jobs that support environmental protection – is a powerful mobilising force behind significant investments and work across all spheres of government. Given persistent high unemployment in South Africa and the Western Cape with 24.4% total unemployment and 50.4% unemployment among 15-24 year olds in the province, pressure to protect existing jobs and create new ones is continuous (Western Cape Government Provincial Treasury, 2014). This thrust is supported nationally through policy, such as the New Growth Path.

To drive green-job creation, there are opportunities to further develop the relationship between the green economy and EPWP (see Box 4: Genius of Place). National EPWP programmes such as Working for Water that are achieving significant environmental gains with quantifiable financial benefits, while providing much needed employment to South Africa's most economically vulnerable. Working for Water was showcased as an example of innovative and inclusive green economy at the OECD's Green Growth and Sustainable Development Forum in Paris in November 2014 (Preston, 2014).

## BOX 7: BOOSTING SKILLS FOR GREENER JOBS IN AQUACULTURE

During 2015, WCG's Department of Environmental Affairs and Development Planning supported the OECD's Local Economic and Employment Development (LEED) Programme in carrying out the research project, "Boosting skills for greener jobs in the Western Cape: the aquaculture sector". This project focused on aquaculture for several reasons:

- Globally, the coastal or blue economy is being promoted as an area of growth
- Aquaculture can potentially provide more sustainable sources of protein for growing populations, if managed sustainably
- Aquaculture has been put forward as one of four priority areas in the first phase of the Presidency's Operation Phakisa<sup>2</sup>
- Operation Phakisa will draw significant investments into the Western Cape

The central question investigated was what kinds of skills are currently required, and will be required across aquaculture businesses and supportive sectors (e.g. finance and regulatory services) to ensure that the sector develops to be resource-efficient and sustainable. The results of the study will be published in an OECD LEED report.

Extensive engagement within WCG Departments, industry organisations, aquaculture companies, academia and civil society, yielded interesting insights:

- Given the potential impacts of aquaculture, sustainable industry development must be environmentally responsible and resource efficient.
- There are already examples of companies implementing resource-efficient solutions and onsite renewable energy generation.
- Many large aquaculture operations are investing significantly in skills development.
- Many of the skills required for greening aquaculture are generic artisanal skills such as plumbing or electrical engineering.
- A role for government, was identified in terms of developing the branding and marketing for Western Cape based aquaculture products.
- There is potential to develop aquaculture within historical fishing communities, where traditional fishing practices no longer provide sustainable livelihoods.

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<sup>2</sup> Operation Phakisa is a results driven approach to policy challenges, involving setting clear plans and targets, and ongoing monitoring and results. Based on the Big Fast Results methodology of the Malaysian Government, it aims to provide effective solutions over the short, medium and long term, for areas of significant opportunity that have been slow to show results in the past.

## BOX 8: SARETEC

The South African Renewable Energy Technology Centre (SARETEC) is the first National Renewable Energy Technology Centre in South Africa, offering specialised industry-related training for the renewable energy sector. Two courses have been accredited so far. Situated at Cape Peninsula University of Technology's Bellville campus, the SARETEC facility is fully equipped with state of the art workshops for wind and solar training, as well as laboratories for hydraulic, electric-solar and composite material.

The Centre is funded predominantly by the Department of Higher Education and Training (DHET) through the National Skills Fund (NSF). Extensive support is also received from the German Ministry for Economic Cooperation and Development through the South African-German Energy Programme (SAGEN), The South African National Energy Development Institute (SANEDI) and GreenCape.

Currently, SARETEC offers various short courses on solar and wind energy, and the centre has already developed its "Wind Turbine Service Technician Qualification" and "Solar PV Technician Qualification". These qualifications are recognised by the South African Qualifications Authority (SAQA) and the Quality Council for Trade and Occupations (QCTO). Both courses have been piloted and enrolment will open in February 2016.

SARETEC has established strong partnerships with government, other academic institutions, industry associations and private sector companies within the renewable energy sector. The facility is housed in a green building that is designed to highlight the use of renewable energy and energy efficient technology. The centre plans to extend courses on offer to include the following:

- Energy Efficiency Technician Qualification (accredited)
- Biogas / Biomass Technician Qualification (accredited)
- Solar PV Lighting protection and Solar PV Principles
- Biomass Principles



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## 5.5 SUSTAINABLE AGRICULTURE

Agriculture, forestry and fisheries contributes significantly to the Western Cape economy (Western Cape Government Provincial Treasury, 2014). Despite its relatively small direct contribution to GDP, the Western Cape has a clear comparative advantage in agriculture. The sector also contributes to food security, generates exports and provides significant employment, as it produces a diversity of products for local and international markets.

Economic dependence on agriculture, forestry and fisheries is especially true of districts outside of the City of Cape Town metropolitan area, namely, Cape Winelands, Eden, West Coast, Overberg and Central Karoo. Seeking to increase the value of this sector, the beneficiation of agricultural produce and 'waste' streams is being actively supported by WCG's GreenCape and Wesgro. The aim of this work is to develop new value chains.

The WCG Department of Agriculture (DoA) is mandated to promote the conservation of agricultural natural resources, especially land and water, and to prevent the fragmentation of agricultural lands. These goals are supported by the extension of conservation agriculture practices as well as promoting climate smart technologies and production practices. DoA has worked in partnership with DEADP to develop a strategy to address climate change across the sector. (More information is available on the SmartAgri web page).

DoA has also established an Agri Desk in a partnership with GreenCape, to facilitate the uptake of sustainable practises in the agricultural sector. This helpdesk has a particular emphasis on improvements in energy efficiency and the use of renewable energy within the sector. It also highlights the potential for water treatment and re-use, as well as waste minimisation and beneficiation strategies.



SOURCE: Western Cape Government Department of Agriculture

## BOX 9: RESOURCE PRODUCTIVITY IN AGRICULTURAL VALUE CHAINS

A unique feature of the Western Cape economy is that, unlike other provinces in South Africa, 17.4 percent of exports are generated in the agriculture sector (Western Cape Government Provincial Treasury, 2015). With the produce located far from most of its export markets, issues such as fuel price fluctuations, carbon taxes and possible preferences of international supermarket chains, present risks to the sector. These risks are in addition to climate variability, water availability and quality and soil quality. Clearly, there are several good reasons to better understand the flow of resources through agricultural value chains, in order to improve efficiencies both in resource use and cost management.

Aquaculture has a noteworthy environmental impact and is a significant source of non-fuel greenhouse gas emissions. In partnership with WCG, GreenCape is using the agricultural sector as the first case for the Regional Resource Flow Model Project. This project consists of a strategic analysis of resources within the sector to identify possible constraints that may limit its productivity and competitiveness over time.

The project has generated carbon intensity estimates for wheat, wine and fruit, as well as partial carbon intensity estimates for livestock and game farming. This information has been benchmarked against international figures for similar agricultural products. While most of the focus was on refining the approach for assessing resources use for grain production, with an eye to using this information to inform policy in future, the example of the wine industry has already stimulated interesting discussions that hold lessons for other product value chains.

Wine production in South Africa has a higher overall carbon footprint than other wine producing regions. The bulk of these emissions can be attributed to processing rather than farming, and emissions levels are further augmented by the necessity of transport to export markets. The energy mix, being largely dependent on coal-fired power stations, has a significant impact on the carbon intensity of local wines. Renewable energy investments, alternative packaging materials, and bulk exporting are all potential strategies to counteract carbon taxes or environmental requirements of retail chains importing South African wines into foreign markets. These will need to be carefully considered, given variable impacts on jobs in the extended value chain for wine.

The next phase of this project will be to support the agriculture sector in improving resource efficiency for energy and water use, as well as testing the viability of waste beneficiation initiatives. Practical advisory support will be offered through GreenCape's Agricultural Sector Desk.

## 5.6 INFRASTRUCTURE AND INFORMATION AND COMMUNICATIONS TECHNOLOGY (ICT)



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### 5.6.1 INFRASTRUCTURE AND BUILT ENVIRONMENT

The Western Cape Infrastructure Framework (WCIF) aims to align all infrastructure development in the Western Cape to the province's strategic agenda, described in One Cape 2040. To realise the sustainability goals of this strategy, WCG's Department of Transport and Public Works (DTPW) has established a Public Works Green Economy Steering Committee. The aim of the committee is to uphold green building principles, by coordinating and driving green initiatives, which includes the development of a green policy relating to the following:

- Utilities and efficient energy/services utilisation
- Modernisation/Green building principles
- Recommending and initiating various pilot studies (e.g. Solar/PV Rooftop Study)

Furthermore, responding to PSG 4: *Enable a resilient, sustainable, quality, inclusive living environment*, the DTPW's Strategic Plan 2015-2020 commits to the following:

- The continued application of green building principles in the building construction sector (as rated by the Green Building Council of South Africa)
- The implementation of integrated public transport networks in George and staggered implementation in Cape Town, achieved through the introduction of: scheduled services to improve the travel experience; non-motorised transportation networks; and right-of-way designs.

The population of the Western Cape is estimated at 6,113,324 people, having increase by 10.8% from 2002. Part of this population growth can be

ascribed to in-migration from other provinces. The Census 2011 projects that the provincial population will grow by a further 10.5 % between 2014 and 2024 (Statistics South Africa, 2012). The population of the province does not have equal access to basic services. For example, 27% of the population can be classified as ‘energy poor’ (South African National Department of Energy, 2013). As basic and additional services are extended to an ever-greater proportion of the citizens of the Western Cape, inclusive growth in a resource constrained province and country demands intelligent and decisive responses. For this reason resource efficiency is being implemented in several areas of service delivery.

An example of more sustainable service delivery is in state-subsidised housing. The WCG Department of Human Settlements (DHS) has publically committed making its new settlements more sustainable, using:

1. Alternative sustainable materials and building methodologies
2. Alternative sustainable design
3. More sustainable settlement layout and increased densification

## 5.6.2 INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

The potential for ICT to enable more resource efficient ways of living in cities is widely documented. ICT can support the transition to a low-carbon economy and the broader sustainable and inclusive development agenda (GeSi, 2015). ICT has been used in agriculture (see Fruitlook project on page 43) to assist farmers in optimising water use. The potential for further application is significant.

Internet access enables access to information that can lead to empowerment for individuals, households and communities. The National Broadband Policy aims to achieve universal broadband access by 2019 (DOC, 2010). In light of this, WCG has developed the Broadband Game Changer to fast-track the rollout of broadband within the province. Guided by the WCG Broadband Strategy and Implementation Plan, the Broadband Game Changer is divided into four streams, namely: Provision of Broadband to all Government Sites, Broadband for the Economy, Transversal Application and Sector specific Initiatives. These streams are described below.





## Green Economy in Municipalities

Western Cape municipal governments have worked to improve access to basic services. 99.1% of households have access to piped water; 96.9% have access to a toilet facility; and 93.4% have access to electricity (STATSSA, 2011). The green economy presents opportunities to address service delivery challenges with new and more sustainable solutions that are more resource and cost efficient and more resilient over the longer term.

More and more municipalities are seeing the case for investing in resource efficiency and innovative green solutions. Mossel Bay Municipality recently designed an innovative portable device for circuit breakers to improve energy efficiency. This invention has resulted in more than ZAR1.5 million in savings for the municipality. Stellenbosch Municipality, faced with a landfill airspace shortage, embarked on a project to reduce the volume of builders' rubble to landfill. By crushing builders' rubble to mix with clay, the project has managed to develop compressed building blocks to be reused in various construction projects.

The City of Cape Town (CoCT) has implemented and supported a number of green economy related projects. These include:

- A landfill waste to energy project
- A Recycling Separation Programme
- A Solar Water Heater (SWH) Accreditation Programme
- Energy efficiency retrofits in CoCT owned buildings
- The MyCiti bus service
- Invasive species management programme
- Various water demand management projects

A process is underway to redefine the City's vision of a green economy to support and coordinate these types of initiatives. Within this process, a Green Jobs Unit is being developed, by expanding the existing the Invasive Species Unit. The objective of the unit is to facilitate job creation in the green economy, by contributing to a healthy and sustainable natural environment that is accessible to all, while creating work opportunities, developing skills and providing small business opportunities related to ecosystem services.

## 6.1 MUNICIPAL REVENUES AND THE ENERGY SYSTEM

The unreliability of the energy supply in South Africa threatens to undermine local economic development plans in Western Cape's various municipalities. The uptake of energy efficiency technologies, along with private solar photovoltaic installations present solutions to the energy security challenge. However, these solutions are complicated by the connection between energy consumption and municipal revenues. Municipalities generate up to 70% of revenues from the on-sale of Eskom-generated electricity. This income is used to fund maintenance and expansion of the municipal electricity distribution network, as well as other municipal services, including environmental and social services. As tariffs payable to Eskom increase, pressure on revenue margins increases, as these costs cannot be fully recuperated from consumers.

Small-scale solar PV systems are becoming increasingly cost effective for many higher-income private consumers. While there are environmental benefits, household cost savings and demand management benefits to this, it also impacts municipal income. These consumers are paying the highest tariff margins on their electricity. These tariffs cross-subsidise a range of services for lower income households. While there is no question that PV uptake is gaining momentum, the question of impact on municipal revenues has been examined by WCG (Camp, Hedden, Bohl, Petersen, & Moyer, 2015).

The *Green Cape: Towards a smarter grid* report suggests that the optimisation of the central grid, through investment in smart metering, is the best response to this trend. The motivation for this investment is that smart metering, enables energy from residential and commercial PV to feed into the grid, increasing its capacity. Facilitating the uptake of smart metering is a priority within the green economy for WCG and municipalities. The broader discussion of how municipalities will generate income in the future is a much wider national discussion, in which WCG is an active participant.



**Warren Rohner** - Darling National Demonstration Wind Farm in Cape Town, South Africa  
SOURCE: © Creative Common: <https://www.flickr.com/photos/warrenski/2529212700>

## BOX 11 GREEN PROCUREMENT IN THE CITY OF CAPE TOWN

The CoCT has greened its procurement in a number of areas. Some of the interventions involve significant capital expenditure, while others result in savings made through small technical changes. Examples of successful green procurement are listed below.

### TRANSPORT

- Where possible, City Fleet tenders include fuel efficiency and Euro Standards to be incorporated in the assessment of tenders. The Electricity Department won the Green Supply Chain awards in 2009 based on its fleet management tender technical specifications, from the Consumer Council of South Africa and, the Institute of Logistics and Transport of South Africa.
- The tender for the MyCiti buses incorporated green specifications (Euro 5 vehicle certification was specified).

### ENERGY EFFICIENCY

- All traffic lights in the city have been retrofitted with light emitting diodes (LED), which are more energy efficient than conventional fittings. The investment of R29 million will result in a saving of 7 459 MWh of electricity, 7 384 tons of carbon, and R11 million per annum. This means that the investment will have a payback period of three years.
- 17% of the city's street lights have been retrofitted with more efficient technologies. The investment of R58 million will result in a saving of 5 193 MWh of electricity, 5 141 tons of carbon, and R7.6 million per annum, resulting in a payback period of seven years.
- 26% of the large CoCT buildings have been retrofitted to improve their energy efficiency. The investment of R45 million will result in a saving of 1373 MWh of electricity, 1259 tons of carbon, and R2.4 million per annum.
- Performance Guarantee Contracts have been introduced. The contracts guarantee energy and financial savings related procured products and services, resulting in reduced operational expenditure.

### WASTE MANAGEMENT

- Currently, over 250 CoCT buildings are actively engaging in recycling, with between 10 and 15 tons of paper and cardboard being recycled each month.
- The CoCT also engages in the removal and recycling of used oil and scrap metal from its departments. These actions generate income for CoCT departments.
- The Solid Waste Management Department, in terms of the Integrated Waste Management Bylaw (2009), is in the process of accrediting private waste management service providers in the City, to ensure that any waste management activities procured by the CoCT (and others) are carried out by accredited service providers in an environmentally responsible manner.

### GREEN BUILDINGS

- The City has incorporated green procurement in the development of its Manenberg Housing Centre, Bloemhof Electricity Building, and the Water Services Head Office.

The CoCT has also promoted the implementation of green procurement in other organisations and homes through, for example, the solar water heater accreditation programme and the Commercial Users' Energy Efficiency Forum. The Mayoral Committee Member for Environment and Spatial Planning played an important role in facilitating the establishment of a Global Lead Cities Network on Sustainable Public Procurement (SPP), committing the City to play an active role in this important area of work.

# Project Update Summary Table



This table includes information on projects that were implemented during the 2014/15 financial year, ending 31 March 2015.

TABLE 6:

## WCG GREEN ECONOMY PROJECTS, MAPPED AGAINST THE GREEN IS SMART STRATEGY DRIVERS

2014/15 GREEN ECONOMY PROJECT SUMMARY TABLE

	2014/15 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
Strategy, Intelligence and Finance	<b>Green Economy Indicator Development</b> Develop indicators to monitor progress in the Western Cape Green Economy	<ul style="list-style-type: none"> <li>The Framework is responsive to international, national, provincial and local green economy policies, strategies and indicator sets.</li> <li>The Framework provides a comprehensive picture of the green economy.</li> <li>It is aligned to national and parallel provincial data collection.</li> </ul>	<ul style="list-style-type: none"> <li>Green Economy Report drafted and launched on 20 March 2015.</li> </ul>	Fill data gaps for the Green Economy Indicators.  Take forward recommendations and continue private sector engagement for the Green Finance Facility.  Extension of investment mapping, and linking to the Green Finance Facility.
	<b>Green Finance Desk</b> Leverage the region's financial capabilities to position WC as a centre for green finance	The project aims to: <ul style="list-style-type: none"> <li>Establish a financier database and network;</li> <li>Create an Investment opportunity map for green economic investment opportunities in the Western Cape;</li> <li>Conduct a municipal revenue analysis; and</li> <li>Drive energy efficiency in provincial buildings.</li> </ul>	<ul style="list-style-type: none"> <li>Engaged with broad network of financiers, and developed extensive database of financing options available, and process to access funding.</li> <li>Mapped size (investment and job creation) of main investment opportunities in green economy.</li> <li>Developed model to determine impact of energy efficiency and embedded generation on municipal revenues, and disseminated findings to stakeholders</li> <li>Included as one of Energy Game changers, working with Dept. of Public Works to implement program</li> </ul>	Further engagement of private sector to unpack role of different levels of government to stimulate greening of investment, and green impact investment in the Western Cape.  Investigate and drive key local and international partnerships to address barriers and unlock value in the green economy in the Western Cape

2014/15 GREEN ECONOMY PROJECT SUMMARY TABLE

	2014/15 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
<p><b>Smart living and working</b>  <b>Priorities: Smart settlements, Smart resource management systems, Major-user resource efficiency, Towards zero waste</b></p>	<p><b>Smart Grids in Western Cape Municipalities</b>                      Promote the large-scale uptake within municipalities of smart grids infrastructure, and embedded generation.</p>	<ul style="list-style-type: none"> <li>The project aims to identify opportunities for embedded generation and smart grids.</li> <li>The project seeks an improved understanding of SSEG in municipalities.</li> <li>The project seeks to identify areas of work for WCG in the theme of embedded energy generation.</li> </ul>	<ul style="list-style-type: none"> <li>Matzikama Case study developed highlighting possible opportunity for SSEG and demand side management to help relieve energy supply constraints. PV consultant appointed by development company to investigate rooftop PV for new development.</li> <li>George and Stellenbosch case studies highlighting impacts of SSEG and energy efficiency on municipal revenue, and implications of tariffs.</li> <li>Smart Grids project work fed into the energy security game changer to assist in highlighting key areas of work.</li> </ul>	
	<p><b>Waste Economy Project (previously RIA Waste)</b>                      Increase the uptake of integrated waste management by municipalities and thereby divert waste from landfill &amp; develop the waste economy</p>	<p>The project aims to:</p> <ul style="list-style-type: none"> <li>Demystify the policy and regulatory landscape for waste projects;</li> <li>Enable effective waste management planning in municipalities;</li> <li>Enable effective waste management planning in municipalities; and</li> <li>Identify levers to develop secondary material value chains.</li> </ul>	<ul style="list-style-type: none"> <li>Tool Scope: overview of municipal processes and licencing requirements; Partnership with German Cooperation Agency (GIZ) secured to develop a national tool. Website name: www.wastetreatmentguide.co.za</li> <li>Beta version of Decision Support Tool (DST) developed through municipal case study: Stellenbosch Municipality; alternative waste management scenarios modelled and integrated into the third generation Integrated Waste Management Plan</li> <li>Focus areas selected: dry recyclables and construction and demolition (C&amp;D) wastes (organics considered in bioenergy project)</li> </ul>	
<p><b>Smart living and working</b>  <b>Priorities: Smart settlements, Smart resource management systems, Major-user resource efficiency, Towards zero waste</b></p>	<p><b>110% Green Genius of Space Phase 2</b>                      This project's purpose is to conduct deeper research using biomimicry methodology in an Informal settlement along the Berg River to explore appropriate technology solutions as well as research locally attuned in order to find a "Genius of Place" for the Western Cape</p>	<p>The project has two main outcomes:</p> <ul style="list-style-type: none"> <li>Enterprise and job creation (Medium term outcomes);</li> <li>Improved water quality and waste reduction (Medium to Long term outcome).</li> </ul>	<ul style="list-style-type: none"> <li>Significant community engagement and buy-in</li> <li>Successful design and costing of prototypes based on existing locally innovated systems</li> <li>Detailed business case being developed identifying potential business opportunities with projected job creation</li> <li>Engagement with potential funding partners</li> <li>Support from Stellenbosch Municipality Executive</li> <li>Investment Case for the project found that the proposed system is far more cost-effective for the municipality</li> </ul>	

2014/15 GREEN ECONOMY PROJECT SUMMARY TABLE

	2014/15 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
<p><b>Smart living and working</b></p> <p>Priorities: Smart settlements, Smart resource management systems, Major-user resource efficiency, Towards zero waste (CONT)</p>	<p><b>Better Living Challenge</b></p> <p>A competition-based project, where contestants submit affordable alternatives for structure, comfort and connectivity in low-income households, with a focus on sustainability and resource efficiency</p>	<ul style="list-style-type: none"> <li>The project aims to create an enhanced awareness of alternative housing solutions by low-income households</li> <li>The project encourages design innovations/ solutions for the low-income market</li> <li>The project enables enterprise and skills development for Challenge winners</li> </ul>	<ul style="list-style-type: none"> <li>Showcase located at the Cape Town Station Forecourt: flow of 300 000 people per day</li> <li>Budget spend of 3R300 000 on communications &amp; marketing leveraged 3 R4million</li> <li>Economic impact of showcase for some exhibitors: R2000 - R30 000 in sales</li> <li>Three products currently being tested in Langa &amp; Khayelitsha</li> <li>BLC 1 stimulated entry of 130 solutions with the input from a selection panel of 47 experts, were reduced to 22 finalists and 33 exhibitors for the BLC Showcase.</li> <li>Three category winners chosen &amp; two student awards</li> <li>Each winner awarded a support package of up to R500 000</li> <li>Currently developing bespoke intervention plan with each winner</li> </ul>	
<p><b>Smart Mobility</b></p> <p>Priorities: Hydrogen and fuel cell technologies, smart mobility systems, alternative fuel and hybrid technologies, Bicycles and electric bicycles</p>	No projects for 2014/15			<p>Identify opportunities for government interventions or private sector engagement and partnerships in:</p> <ul style="list-style-type: none"> <li>public transport</li> <li>private motorised transport</li> <li>enabling and supporting non-motorised transport</li> <li>supporting switching from road to rail freight haulage</li> </ul>

2014/15 GREEN ECONOMY PROJECT SUMMARY TABLE

	2014/15 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
<b>Smart Ecosystems</b> <b>Priorities: Ecosystems research and education, infrastructure and jobs, Responsible tourism, Sustainable mariculture</b>	<b>Berg River Alien Clearing Investment Project</b> Restore the most important river system, namely the Berg River, to a healthy river system that will promote human wellbeing by reducing the vulnerability of very real flooding risks associated with climate change. The project seeks to improve the river's water quality, as it is a vital resource to nearby agricultural lands that draw water from it	<ul style="list-style-type: none"> <li>The project produces research on several uses of biomass as to suitability for possible economic opportunities in Green biomass use.</li> </ul>	<ul style="list-style-type: none"> <li>Company has been procured to conduct the research</li> <li>Delivery of feasibility studies before September 2015</li> </ul>	Identify key research needs to support  Assess value of ecological infrastructure with regard to disaster risk management, and related work  Explore opportunities for income generation in protected areas, including sustainable tourism and enterprise opportunities related to sustainable use and conservation of biodiversity
	<b>Income Generation in Protected Areas</b> Develop a strategic plan, including a project pipeline, to unlock income generating opportunities within and adjacent to CapeNature's protected areas. The investment case will determine the feasibility, viability and sustainability of generating income within and adjacent to Protected Areas.	<ul style="list-style-type: none"> <li>The project identifies income generation opportunities identified in CapeNature's protected areas</li> </ul>	<ul style="list-style-type: none"> <li>Phase 1 - Final Progress Report and Income Generation Matrix plotting potential economic opportunities has been completed</li> <li>Phase 2 - The Evaluation Report investigates the feasibility and desirability of different economic opportunities, and will identify 10 sustainable financing projects, as well as final feasibility, zoning reports and business plans to enable implementation</li> </ul>	Green jobs stimulation, links to Extended Public Works Programme  Support for aquaculture development, including regulatory support, assisting with energy efficiency and uptake of renewable energy, and unpacking of jobs potential and skills requirements for the Western Cape
	<b>Eco-Invest Phase II</b> Create a space to enable the private sector to invest in ecosystems goods and services projects where co-benefits are achievable	The project paves the way for future investment in ecosystem goods and services by" <ul style="list-style-type: none"> <li>Marketing the Eco-Invest approach</li> <li>Nurturing existing and emerging initiatives</li> <li>Selling viable project ideas</li> </ul>	<ul style="list-style-type: none"> <li>Capacity building and marketing of Eco-Invest approach to stakeholders through extensive meetings and workshops.</li> <li>Unpacking the 5 priority value chains and cross-cutting opportunities, collaboratively and ensuring stakeholder buy-in. Supporting stakeholders and champions of these initiatives towards taking up their roles in implementation.</li> <li>Identified opportunities for implementation / investment with stakeholders through which institutional and social capital was unlocked.</li> <li>Finalised value chain analyses and business / project plans. Final reporting for priority value chains and projects.</li> </ul>	

2014/15 GREEN ECONOMY PROJECT SUMMARY TABLE

	2014/15 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
<b>Smart Agri-production</b> Priorities: Sustainable farming practices, Farming in harmony with nature, Smart technologies, Waste as a commercial resource	<b>Biofuels: From Viability to Pilot Projects</b> Deliver an holistic analysis of different biofuel feedstock and production technology options, informed by a detailed market analysis for biofuels in the region, and a thorough understanding of feedstock potential. The project will result in clear guidance for business development in this critical arena	<ul style="list-style-type: none"> <li>Reassessment of the WC's biofuel production potential, using a multi-criteria analysis of bioethanol, biodiesel and biogas</li> <li>Reassessment of business case for triticale conversion to ethanol and animal feed</li> </ul>	<ul style="list-style-type: none"> <li>Reassessment of the WC's biofuel production potential, using a multi-criteria analysis of bioethanol, biodiesel and biogas</li> <li>Reassessment of business case for triticale conversion to ethanol and animal feed</li> </ul>	Support existing work in Conservation Agriculture with links to Biofuels  Mapping of key resource flows through the agricultural and agro-production value chains  Incentivise innovation related to resource efficiency  Interventions to enable more sustainable resource utilisation on farms, including use of technology  Explore potential of value generation from on-farm waste through green chemistry and other options  Explore new opportunities for commercial and smallholder agriculture
	<b>FruitLook</b> Develop an operational application through which information on actual crop water use can be provided to farmers on a weekly basis through their cell phones	<ul style="list-style-type: none"> <li>The project encourages efficient water use by farmers</li> </ul>	<ul style="list-style-type: none"> <li>Conceptual design of application - completed</li> <li>Testing phase - completed</li> <li>Final commissioning - partially completed, full implementation can only be done once FruitLook start again in October 2015</li> </ul>	
<b>Smart Enterprise</b> Priorities: Integrated framework of measures, Public and private procurement	<b>Western Cape Industrial Symbiosis Programme (WISP)</b> Deliver a free facilitation service that connects companies so that they can identify and realise the business opportunities enabled by using unused or residual resources (materials, energy, water, assets, logistics, expertise)	The project aims to: <ul style="list-style-type: none"> <li>Build the IS network</li> <li>Report the aggregated impact in terms of KPIs</li> <li>Contribute towards the development of a National South African Industrial Symbiosis Programme</li> </ul>	<ul style="list-style-type: none"> <li>Current membership is over 250 companies. More than 1000 under-utilised resources have been identified within the member network. Resource types include: materials, capacity, expertise, logistics energy and heat.</li> <li>Economic: Cost savings R3.6 million   Additional revenue R3.9 million   Private Investment R100, 000</li> <li>Environmental: Waste diversion 394 tonnes   2,100 tonnes CO2e</li> <li>Social: 10 permanent direct jobs created   11 temporary direct jobs created</li> <li>Funded by the British High Commission Prosperity Fund</li> </ul> Working group setup consisting of: GreenCape, NCPC, KZN DEDTEA and ISL. Programmes in Gauteng and KZN have commenced. J&G completing Scoping Assessment for a National IS Strategy for end April 2015. Development of the Strategy to be driven by NCPC.	Support green industry development in the Western Cape  Support resource efficiency within industry  Continue to stimulate value generation from 'waste' streams through the extension of WISP  Drive key strategic measures to enable investment in LNG  Stimulate business opportunities in the green economy through pilot projects, links to the Green Finance Facility and engaging universities to stimulate key research agenda  Drive Sustainable Public Procurement across the province and stimulate knowledge sharing and good practice with our municipalities

2014/15 GREEN ECONOMY PROJECT SUMMARY TABLE

	2014/15 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Smart Enterprise</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Priorities: Integrated framework of measures, Public and private procurement</p>	<p><b>Atlantis GreenTech Special Economic Zone (SEZ)</b></p> <p>Establish a GreenTech Special Economic Zone in Atlantis</p>	<ul style="list-style-type: none"> <li>The project delivers Pre-Feasibility, Feasibility, Operation and business plans.</li> <li>The project will establish a license company for the operation of the SEZ.</li> <li>The project aims to designate the area as a SEZ.</li> </ul>	<ul style="list-style-type: none"> <li>Pre-Feasibility, Feasibility, Operation and business plans completed</li> <li>Application for licensing company is In progress. Will be submitted once the regulations have been signed off.</li> <li>Application for designation will begin after the license for the SEZ has been received</li> </ul>	
	<p><b>LNG Importation</b></p> <p>Commission key elements of a full techno-economic feasibility study that will clarify the optimal technical solutions for the importation of natural gas, will determine the costings and minimum demand required to enable the project, and drive towards a bankable case for potential investors</p>	<ul style="list-style-type: none"> <li>This project aims to make significant progress on LNG importation bankability case.</li> </ul>	<ul style="list-style-type: none"> <li>4 technical studies completed; 5th study commissioned                             <ul style="list-style-type: none"> <li>Technical reports indicate it is feasible to land LNG within the Saldanha region</li> <li>Technically feasible to distribute the gas along the Saldanha-Cape Town corridor</li> <li>Anchor off-take agreement for power generation required</li> </ul> </li> <li>West Coast region recognised as preferred site for LNG importation</li> <li>RFI to be published for 3000 MW of gas power (Mid-May); RFP 4th quarter 2015</li> </ul>	
	<p><b>Sustainable Public Procurement</b></p> <p>Leverage WCG spend in order to encourage green innovation and resource efficient practices in the private sector</p>	<ul style="list-style-type: none"> <li>The project seeks to mainstream Sustainable Public Procurement in WCG.</li> </ul>	<ul style="list-style-type: none"> <li>Under the 2Wise2Waste transversal resource efficiency programme, green procurement was expanded to include all Sustainable Public Procurement for the whole of WCG</li> <li>A partnership and project was co-designed with the IISD to mainstream SPP in WCG under the UNEP 10FYP SPP Programme</li> <li>SPP is now being driven through a transversal procurement forum convened by Provincial Treasury, with strategic inputs from DEADP</li> </ul>	

# Appendix 1: Western Cape Green Economy Indicator Additional Notes on Definition and Scope



	Indicator	Additional Notes on Definition and Scope of Indicator	Data Sources
1	% Change in energy sector emissions against 2009 baseline	Data is for the energy sector only. This excludes emissions from Agriculture, Forestry and Other Land Use, as well as Industrial and Waste emissions.	Western Cape Government (2014) Energy Consumption and CO2 Emissions Database for the Western Cape
2	Agricultural land improved through conservation measures annually	This refers to land improved through interventions falling under the Western Cape Department of Agriculture Provincial Landcare Programme.	WCG DOA Annual Report 2013/14
3	Total water supply versus total water demand	These values refer to the Western Cape Water Supply area which covers Cape Town, some towns in the Stellenbosch, Drakenstein, Swartland and Saldanha Bay municipalities and agriculture along the Berg River and upper Riviersterend River. This data does not cover the whole of the Western Cape. The total 'adjusted' water use is based on releases from the dams and the capped allocation for the agricultural sector. Two thirds of the consumption was for urban use and the remainder was allocated for irrigation. The downward trend in water demand from 2012 is partly due to the effort by municipalities to reduce their water consumption and water losses. The 2012 value has been adjusted from last years figure on the recommendation of Dr Kornelius Riemann (Umvoto), author of the <i>Support to the Continuation of the Water Reconciliation Strategy for the Western Cape Water Supply System Status Report October 2013</i> .	DWS (2014) Support to the Continuation of the Water Reconciliation Strategy for the Western Cape Water Supply System: Status Report October 2014. Umvoto Africa (Pty) Ltd with Worley Parsons on behalf of the Directorate : National Water Resource Planning
4	Carbon emissions for energy sector	This data excludes emissions from Agriculture, Forestry and Other Land Use, as well as Industrial and Waste emissions.	Western Cape Government (2014) Energy Consumption and CO2 Emissions Database for the Western Cape
5	Carbon emissions per unit GDP	This data excludes emissions from Agriculture, Forestry and Other Land Use, as well as Industrial and Waste emissions. The unit of measurement has been changed from last year's report, to conform to national reporting practices.	Western Cape Government (2014) Energy Consumption and CO2 Emissions Database for the Western Cape
6	Total energy consumption	This data is drawn from the Western Cape Government Energy Consumption and CO2 Emissions Database for the Western Cape, published every second year.	Western Cape Government (2014) Energy Consumption and CO2 Emissions Database for the Western Cape
7	Energy consumption by sector	WCG follows the Department of Energy in the use of the Standard Industrial Classification codes.	Western Cape Government (2014) Energy Consumption and CO2 Emissions Database for the Western Cape
8	Energy consumption per unit GDP	The unit of measurement has been changed to conform to national reporting practices.	Western Cape Government (2014) Energy Consumption and CO2 Emissions Database for the Western Cape
9	Energy consumption per capita	The unit of measurement has been changed to conform to national reporting practices.	Western Cape Government (2014) Energy Consumption and CO2 Emissions Database for the Western Cape
10	Total energy produced from renewable sources by independent power producers	This data includes renewable energy generated, but not necessarily feeding into, the national grid. Small-scale embedded generation is not included.	GreenCape database of REIPPPP preferred bidders
11	Municipal solid waste generated annually	DEA defines municipal solid waste as waste generated from residential and non-industrial commercial sources. This is predominantly domestic waste with the addition of commercial waste collected by a municipality, within a given area. It includes both solid and semi-solid waste, and generally excludes industrial hazardous waste.	DEA & CSIR (2012) National Waste Information Baseline Report.
12	% Waste diverted from landfill annually		DEA & CSIR (2012) National Waste Information Baseline Report

	Indicator	Additional Notes on Definition and Scope of Indicator	Data Sources
13	Green Drop score	The Green Drop score is a weighted score for municipal wastewater. The audit assesses the entire value chain involved in municipal wastewater services including collection, treatment, and discharge of sewage.	DWA (2013) Green Drop Report
14	% Households with access to broadband connection	These are households with access to broadband connection via mobile or landline.	StatsSA: General Household Survey
15	% Students from science and engineering faculties	This is the proportion of the total number of registered students at Western Cape higher education institutions	Cape Higher Education Consortium
16	% Share of agricultural and agri-processing exports to total exports	The data highlights the value of agri-processing. % share of AFF exports (excluding agri-processing) to total exports produced in WC for 2013 is 15.1% Source: PERO 2014 (pg. 40 (Table 3.2).	Agriculture Book 2 2011-2013 (WCG PERO)
17	Total value of aquaculture sector	This includes marine and freshwater aquaculture, but excludes seaweed, carp, ornamentals and koi carp. The total value of aquaculture in South Africa is ZAR696 million (38.1% up from 2012 to 2013).	DAFF: Aquaculture Yearbook 2014 (unpublished as at 06.2015)
18	Annual tonnage produced by aquaculture	This figure includes marine and freshwater aquaculture, but excludes seaweed, carp, ornamentals and koi carp. Total tonnage for South Africa is 4,946.41 t.	DAFF: Aquaculture Yearbook 2014 (unpublished as at 06.2015)
19	Modal split for passenger transport	This data is only for the City of Cape Town. Passenger transport is defined as minibus taxi, bus service, Integrated Rapid Transport and commuter rail; it excludes non-motorised transport.	CoCT Comprehensive Integrated Transport Plan 2013 -2018 Available at <a href="http://www.capetown.gov.za/en/IDP/Pages/StatutoryPlans2012.aspx">http://www.capetown.gov.za/en/IDP/Pages/StatutoryPlans2012.aspx</a> as Annexure F
20	% Volume of land freight haulage by rail	This is estimated percentage of land freight haulage by rail (measured in tonne kilometres). Findings are displayed per transport corridor using different baskets of commodities.	Tristan Wiggill (ed.) Review of the National Freight Logistics Strategy in Transport World Africa. Available at: <a href="http://www.slideshare.net/TristanWiggill/review-of-the-national-freight-logistics-strategy">http://www.slideshare.net/TristanWiggill/review-of-the-national-freight-logistics-strategy</a>
21	% Households with access to energy	This data refers to households with access to electricity mains supply.	StatsSA: General Household Survey
22	% Households with measure of food insecurity	These are households for which access to food is inadequate or severely inadequate.	StatsSA: General Household Survey
23	% Households with access to sanitation	The data includes households with access to standard toilet facilities such as flush toilets or a septic tank or a pit toilet with a ventilation pipe.	StatsSA: General Household Survey
24	% Land under conservation	The Biodiversity Stewardship, Biosphere and World Heritage Site Programmes within CapeNature facilitate conservation at the landscape level.	CapeNature Annual Report 2013/ 2014
25	Annual value of renewable energy projects financed by national and international green/climate funds.	This includes investment for manufacturing and generation. The general debt to equity split has been 70:30.	GreenCape
26	Annual value of capital investment in aquaculture**	This is the value of capital investment in the aquaculture sector. Total South African investment in the industry via the Aquaculture Development and Enhancement Programme is ZAR38.83 million.	DAFF: Aquaculture Yearbook 2014 (unpublished as at 06.2015)

Notes Three indicators from the previous report's set have been dropped due to the unavailability of data going forward. These are: Loss of economic value from estuaries to fisheries; Total water use per unit GDP per sector; and Total value of public investment in green infrastructure.

# Appendix 2: South African National Policy and Strategy Supporting the Green Economy



<b>National Strategy for Sustainable Development 2011-2014 (NSSD1)</b>	The NSSD1 identifies "Towards a green economy" as being one of the five key priorities. The green economy encompasses economic growth and employment initiatives that prevent environmental degradation and pollution, loss of biodiversity and unsustainable natural resource use.
<b>National Development Plan (NDP), 2011</b>	The green economy discussion is largely oriented around the promotion of renewable energy, and energy efficiency. The NDP states that, by 2030, South Africa is envisaged to have a low-carbon economy where all sectors of society are resource efficient. To achieve this, South Africa will need long-term strategies for both adapting and reducing its carbon emissions. The green economy agenda is identified as a mechanism for promoting deeper industrialisation, energy efficiency and employment.
<b>2020 New Growth Plan (Accord 4: Green Economy Accord), 2011</b>	The 2020 New Growth Plan identifies the green economy as being one of the key sectors for growth. The Green Economy Accord prioritises green industries and manufacturing through a localised strategy, that uses the enormous spending on climate change-induced technologies, to create local industrial capacity, local jobs and local technological innovation. The opportunities in the green economy are described as varied and include energy efficiency, recycling, green buildings and biofuels.
<b>National Climate Change Response Policy (NCCRP), 2011</b>	The NCCRP aims to promote investment in human and productive resources that will facilitate the growth of the green economy. The NCCRP states that government will have to increase the mobility of labour and capital out of carbon intensive sectors and industries, towards greener productive sectors and industries.
<b>Industrial Policy Action Plan (IPAP), 2013</b>	The IPAP identifies green industries as a priority area. It supports the state's comprehensive and integrated drive to scale up industrial policy by developing and designing sector-specific incentives for strategic areas, including the green industry area.
<b>Draft Policy and Strategy Framework for Green Economy in the Context of Sustainable Development: Towards Implementation of the National Development Plan, 2014</b>	The draft policy and strategy framework states that, in terms of the 2010 green economy deliberations, South Africa views a green economy as a sustainable development path based on addressing the interdependence between economic growth, social protection and natural ecosystem.



## Appendix 3: Acronyms

- BRICS** Brazil, Russia, India, China and South Africa
- BRIP** Berg River Improvement Plan
- CoCT** City of Cape Town
- CSIR** Council for Scientific and Industrial Research
- DEA** Department of Environmental Affairs
- DEADP** Department of Environmental Affairs and Development Planning
- DEDAT** Department of Economic Development and Tourism
- DETEA** Department of Economic Development, Tourism and Environmental Affairs
- DHS** Department of Human Settlements
- DLG** Department of Local Government
- DTPW** Department of Transport and Public Works
- DWS** Department of Water and Sanitation
- EDP** Western Cape Economic Development Partnership
- EPWP** Expanded Public Works Programme
- GBCSA** Green Building Council of South Africa
- GGGI** Global Green Growth Institute
- GGKN** Green Growth Knowledge Network
- GHG** Greenhouse Gas
- ICT** Information and Communications Technology
- IDC** Industrial Development Corporation
- IDZ** Industrial Development Zone
- ILO** International Labour Organisation
- IISD** International Institute for Sustainable Development
- IPCC** Intergovernmental Panel on Climate Change
- LEED** Local Economic and Employment Development
- NBSAP** National Biodiversity Strategy and Action Plan
- NCCRP** National Climate Change Response Policy
- NDP** National Development Plan
- NHW** Neighbourhood Watch
- NSSD 1** National Strategy for Sustainable Development
- OECD** Organisation for Economic Cooperation and Development

- PAES** Protected Area Expansion Strategy
- PAGE** Partnership for Action in the Green Economy
- PBSAP** Provincial Biodiversity Strategy and Action Plan
- PERO** Provincial Economic Review and Outlook
- PSGs** Provincial Strategic Goals
- PSP** Provincial Strategic Plan
- REIPPPP** Renewable Energy Independent Power Producer Procurement Programme
- RIA Waste Project** Regulatory Impact Assessment Waste Project
- SAGEM** South African Green Economy Modelling Report
- SARETEC** South African Renewable Energy Technology Centre
- SCP** Sustainable Consumption and Production
- SDGs** Sustainable Development Goals
- SEZ** Special Economic Zone
- SMEs** Small and Medium Enterprises
- SPP** Sustainable Public Procurement
- SWH** Solar Water Heater
- TVET** Technical Vocational Education and Training
- UN** United Nations
- UNDP** United Nations Development Programme
- UNEP** United Nations Environmental Programme
- UNIDO** United Nations Industrial Development Organisation
- UNITAR** United Nations Institute for Training and Research
- UN-REDD** United Nations Collaborative Programme on Reducing Emissions from Deforestation and Forest Degradation in Developing Countries
- WBCSD** World Business Council for Sustainable Development
- WCCCRS** Western Cape Climate Change Response Strategy
- WCG** Western Cape Government
- WCIF** Western Cape Infrastructure Framework
- WEF** World Economic Forum
- WISP** Western Cape Industrial Symbiosis Project
- 10YFP** 10 Year Framework of Programmes



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