



**Western Cape
Government**
Environmental Affairs and
Development Planning

BETTER TOGETHER.

Western Cape Government Green Economy Indicator Report 2016

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About this Report

This is the third Western Cape Government (WCG) *Green Economy Report*. 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 2015 and ending on 31 March 2016. This was the third year of targeted 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. Most of the sector data is for the 2014 calendar year, but where this is not the case, the relevant year is provided. The WCG Department of Environmental Affairs and Development Planning Chief Directorate Environmental Sustainability compiled this report. We would like to acknowledge all colleagues and stakeholders who have contributed to this report.

Lead author: Karen Shippey

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Contributors:

Wendy Ndungu	Department of Environmental Affairs & Development Planning
Rushka Ely	Department of Environmental Affairs & Development Planning
Ronald Mukanya	Department of Environmental Affairs & Development Planning
Lize Jennings-Boom	Department of Environmental Affairs & Development Planning
Albert Ackhurst	Department of Environmental Affairs & Development Planning
Jason Mingo	Department of Environmental Affairs & Development Planning
Joy Leaner	Department of Environmental Affairs & Development Planning
Eddie Hanekom	Department of Environmental Affairs & Development Planning
Mapula Tshangela	National Department of Environmental Affairs
Michelle Britton	Department of Transport & Public Works
Mario Brown-	Department of Transport & Public Works
Gavin Miller	Department of Social Development
Ilse Trautmann	Western Cape Department of Agriculture
Andre Roux	Western Cape Department of Agriculture
Francis Steyn	Western Cape Department of Agriculture
Ferdie Endemann	Western Cape Department of Agriculture
Anzel Venter	Department of Economic Affairs & Tourism
Olivia Dyers	Department of Economic Affairs & Tourism
Elizabeth Walters	Department of Economic Affairs & Tourism
Cabral Wicht	Department of Economic Affairs & Tourism
Hildegard Fast	Department of Economic Affairs & Tourism
Maloba Tshehla	GreenCape
Salomé Bronkhorst	GreenCape
Helen Davies	City of Cape Town
Niki Covary	City of Cape Town
Sivuyile Jokazi	City of Cape Town
Keagan Hulley	Department of Forestry & Fisheries
Stephanie Midgley	University of Cape Town
Alan Brent	University of Stellenbosch
Kornelius Riemann	Umvoto Africa
Najma Mohammed	International Labour Organisation

1 Introduction

In some ways 2015-2016 was a watershed year – we witnessed the beginnings of a shift in international market forces with Britain voting to exclude itself from the European Union sending economic shock waves across global markets. Shortly thereafter we watched as the world's nations agreed to the Sustainable Development Goals as a replacement to the Millennium Development Goals. Then the end of the year saw the global powers agreeing to keep global climate change impacts below a 2°C temperature rise from pre-industrial levels in the Paris Agreement. These shifts are not surprising when you consider that the World Economic Forum declared in its 2016 Risk Report that extreme weather events, poor response to climate change, natural catastrophes, biodiversity loss and ecosystem collapse, water scarcity and energy price shocks were within the top ten global risks to economic growth. It is important to reflect on the fact that 2016 was determined as the hottest year ever on record, and this fact, together with the predominant El Nino which was in effect for most of the year, had massive impacts globally and in Western Cape. This resulted in drought and increased numbers of fires for the year.

The commitment to developing the Green Economy in South Africa remains firm in this changing global landscape as it is recognised as **“an economy that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities”** (United Nations Environment Programme, 2014).

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 pursuing 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 economic activities in a holistic way so that value chains and value creation are undertaken in a way that doesn't compromise the wellbeing of our people and environment. As such it is a challenge for the whole of society.



1.1 An inclusive and sustainable economy

According to the then United Nations Secretary General, Ban Ki-moon, *“Saving our planet, lifting people out of poverty, advancing economic growth...these are one and the same fight. We must connect the dots between climate change, water shortages, global health, food security and women’s empowerment. Solutions to one problem must be solutions for all”* (United Nations, 2011). As a global policy agenda, the green economy is not only concerned with optimal natural resource management, conservation and allocation, but it also supports social development and economic growth and employment aims of the country, and its provincial and local governments.

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, productivity levels and increased real earnings of currently employed people. It is recognised that government plays an important role in enabling innovation and entrepreneurial growth. 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 (WCG 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 3.4** and **Section 7** for more detail).

The 2016 Provincial Economic Outlook Report (PERO) (WCG Provincial Treasury, 2016) recognised the explicit role of government in stimulating innovation and entrepreneurial growth as a path to stimulating inclusive growth. As such the Green Economy portfolio has actively supported de-risking areas of innovation and providing platforms from which to launch new green products and services.

Many companies with operations in the Western Cape have continued to respond 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 (National Business Initiative, 2015), (Engineering News, 2016); (National Business Initiative, 2016). The CDP disclosure and performance report noted that there are signs of slowing momentum in the active decarbonising efforts of the private sector which are likely related to the poor economic outlook. It is thus even more important for government departments and agencies to play an enabling role to incentivise and support continued action, as well as enhancing the scale of these efforts. 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.

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 with the aim to help refine and implement provincial policies, strategies and interventions. The PERO has an annual companion publication, the Municipal Economic Review and Outlook (MERO) which allows for further disaggregation of economic information to a sub-regional level. This section is summarised from the 2016 PERO (WCG Provincial Treasury, 2016).

Economic growth globally was under significant pressure in 2015 with most emerging markets experiencing recessions, falling commodity prices and a slowdown in China's imports. South Africa, including the Western Cape, has a pessimistic economic growth outlook. According to the 2016 report, a contraction of 0.2% is expected in 2016 across the South African economy although an improvement expected in 2017 with predicted growth of an estimated 1.1%.

The Western Cape is less exposed to the mining sector's volatility and had a 0.2% growth expectation during 2016. The Western Cape generally performs marginally better than national indicators. However, despite this better-than-average economic performance, job growth performs poorer in the province than the national average. Unemployment levels remain around 25% in the country with the Western Cape estimated to be 20.8%. The majority of workers are between the ages of 25 and 44 with workers generally more skilled than their national counterparts. 47% of the unemployed in the Province are 15-24 years old which means that there continues to be a serious need for youth focussed employment opportunities.

It is in this constrained economic context that the PERO seeks to identify opportunities to stimulate investment and inclusive economic growth. Africa overtook Europe as the leading destination for the Province's exports and this pattern has remained since 2014. According to the 2016 report, agri-processing is one of the few sectors to record a trade surplus despite the severe drought conditions which have dominated the South African landscape for the past 18 months. The persistence of an agricultural drought would influence economic growth and had already put pressure on local food prices. Despite this, Agri-processing remains a key focus for stimulation of growth and jobs in the region, however, it is recognised that to maintain the trade surplus and capture the benefits of the depreciated rand, there needs to be an expansion of responses to climate change in the value chains of agriculture and agri-processing.

A key message in the PERO is that the Western Cape is vulnerable to international and domestic shocks and more emphasis must be placed on the "role of the entrepreneurial



state in inclusive growth". The state, however, has a key role to play in creating and shaping markets and needs to move beyond attempts to "fix" non-functional markets to targeted action aimed at investing in transformative markets and sectors. "Only through constant innovation can an economy continue to increase productivity and competitiveness and thereby raise incomes for all..." (pg 9 PERO, 2016)

2 Policy Shifts

2.1 Global

As noted above, 2015 was a significant year in the resolution of global agreements impacting on the green economy arena. The July 2015 UN Addis Ababa Action Agenda on Financing for Development, the ratification of the Sustainable Development Goals (SDGs) in September 2015 and the acceptance of the Paris Agreement on Climate Change in November 2015 (which entered into force on the 4 November 2016) all have significant implications for the global policy environment



The United Nations development agenda being negotiated is one which takes to heart the link between ensuring the functionality of our ecosystems together with health and wellbeing of our peoples. Whilst the SDGs and Climate Change negotiations were important, the key to the global policy shift was in the funding mechanisms which could be identified to finance the necessary actions to safeguard

sustainable development. According to one international commenter, Dario Kenner, at the heart of this debate was the 1992 Rio Declaration principle of "common but differentiated responsibilities" (CBDR) and how these would be financed (Kenner, 2016). In July 2015, the Addis Ababa Action Agenda was agreed to by 193 UN member states. This agreement included the actions listed in **Box 1** and was focussed on providing financial enabling mechanisms for the SDGs and Climate Change Responses which would be agreed to later that year.

Box 1: Extract from Addis Ababa Action Agenda Agreement Press release (United Nations, 2015)

Technology—Countries agreed to establish a Technology Facilitation Mechanism at the Sustainable Development Summit in September to boost collaboration among governments, civil society, private sector, the scientific community, United Nations entities and other stakeholders to support the sustainable development goals. (Established 26 September 2015 as a UN Inter-agency task team and the first formal meeting held in March 2016)

Infrastructure—Countries agreed to establish a Global Infrastructure Forum to identify and address infrastructure gaps, highlight opportunities for investment and cooperation, and work to ensure that projects are environmentally, socially and economically sustainable.

Social protection—Countries adopted a new social compact in favour of the poor and vulnerable groups, through the provision of social protection systems and measures for all, including social protection floors.

Health—Countries agreed to consider taxing harmful substances to deter consumption and to increase domestic resources. They agreed that taxes on tobacco reduce consumption and could represent an untapped revenue stream for many countries.

Micro, small and medium-sized enterprises—Countries committed to promote affordable and stable access to credit for smaller enterprises. They also pledged to develop and operationalize a global strategy for youth employment and implement the International Labour Organization Global Jobs Pact by 2020.

Foreign aid—Countries recommitted to achieve the target of 0.7 per cent of gross national income for official development assistance, and 0.15 to 0.20 per cent for least developed countries.

A package of measures for the poorest countries—Developed countries commit to reverse the decline in aid to the poorest countries, with the European Union committing to increase its aid to least developed countries to 0.2 per cent of gross national income by 2030. They also agree to adopt or strengthen least developed countries investment promotion regimes, including with financial and technical support. Governments also aim to operationalize the technology bank for this group of countries by 2017.

Taxation—The Agenda calls for strengthening support for the work of the UN Committee of Experts on International Cooperation in Tax Matters to improve its effectiveness and operational capacity, and the engagement with the Economic and Social Council. It emphasizes the importance of inclusive cooperation and dialogue among national tax authorities.

Climate Change—The Action Agenda calls on developed countries to implement their commitment to a goal of jointly mobilizing USD100 billion per year by 2020 from a wide variety of sources to address the needs of developing countries. Countries also committed to phase out inefficient fossil fuel subsidies that lead to wasteful consumption.

(Extracts from UN Press Release 17 July 2015) <http://www.un.org/esa/ffd/ffd3/press-release/countries-reach-historic-agreement.html>

Having the SDGs ratified was only the beginning of the work since there is now a focus on localisation of the goals and mainstreaming them into policy and action plans at a country and regionally level. The SDGs do not have an explicit green economy goal as it is seen as a tool for achieving Sustainable Development and not a goal in and of itself. **Table 1** indicates the alignment between the SDGs and the WCG Green Economy Indicator set reported on in this annual report.



UNEP has partnered with other UN agencies and civil society to develop a vision for the green economy, beyond 2015 (United Nations Environment Programme, 2015) (United Nations Environment programme, 2015). The Partnership for Action on Green Economy, UN response to the Rio+20 call to assist countries on green economy combines the collective expertise of ILO, UNDP, UNEP, UNIDO and UNITAR. The Partnership launched a South African Forum in September 2015 and aims to support South Africa in its quest to transition to a greener economy (United Nations Environment Programme, 2016).

There are a host of 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+

2.2 South Africa

Whilst there is good alignment between the SDGs and the South Africa's National Development Plan (NDP), there is still a need to consolidate the approach which the country will be adopting and develop a sense of ownership of these goals at a regional and sub-regional level. Table 1 shows the alignment between the SDGs, the South African Green Economy Strategy and the indicators reported on in the Western Cape.

Table 1: Alignment between the Sustainable Development Goals, the South African National Green Economy and the WC Green Economy Indicators

SDG	SDG Description	South African National Green Economy Strategy	WCG Green Economy Indicators
1	End poverty in all its forms everywhere	Overall goal of Strategy to reduce poverty	Socio-economic
2	End hunger, achieve food security and improved nutrition and promote sustainable agriculture	Agriculture, food production and forestry Integrated sustainable agricultural production	Socio-economic
3	Ensure healthy lives and promote well-being for all at all ages	Sustainable waste management practices <ul style="list-style-type: none"> • Waste beneficiation • Zero waste community programme for 500 000 households 	Environmental Quality of Life
4	Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	General NDP principle but not explicitly covered in this strategy.	Socio-economic

5	Achieve gender equality and empower all women and girls	General NDP principle but not explicitly covered in this strategy.	Not covered
6	Ensure availability and sustainable management of water and sanitation for all	Water management <ul style="list-style-type: none"> Water harvesting Alternative technology for effluent management Comprehensive municipal water metering (Demand side management) Reduce water losses in agriculture, municipalities and mining 	Natural Resource Base
7	Ensure access to affordable, reliable, sustainable and modern energy for all	Clean energy and energy efficiency <ul style="list-style-type: none"> Expanding off-grid options in rural and urban communities REFIT (Renewable Energy Feed-in Tariff) optimisation for large scale renewable and localisation and Up-scaling Solar Water Heater rollout 	Resource Productivity
8	Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	Overall goal of Strategy to reduce poverty and stimulate job creation	Socio-economic
9	Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	Sustainable transport and infrastructure Sustainable waste management practices	Policy and Finance
10	Reduce inequality within and among countries	Overall goal of Strategy to reduce poverty	Socio-economic
11	Make cities and human settlements inclusive, safe, resilient and sustainable	Greening buildings and the built environment Promoting non-motorised transport Sustainable waste management practices	Environmental Quality of Life
12	Ensure sustainable consumption and production patterns	Sustainable consumption and production <ul style="list-style-type: none"> Industry specific production methods Industrial production technology changes 	Socio-economic
13	Take urgent action to combat climate change and its impacts	General goal of greening the economy	Resource Productivity
14	Conserve and sustainably use the oceans, seas and marine resources for sustainable development	Resource conservation and management	Socio Economic
15	Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage	Resource conservation and management <ul style="list-style-type: none"> National payments for ecosystem 	Natural Resource Base



	forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	<p>services</p> <ul style="list-style-type: none"> • Up-scale “Working for” programmes (for example Working for Water) • Infrastructure resilience and ecosystems • Offset programme • Wildlife management 	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	General NDP principle but not explicitly covered in this strategy.	Not covered
17	Strengthen the means of implementation and revitalize the global partnership for sustainable development	<p>Environmental sustainability</p> <ul style="list-style-type: none"> • Greening large events and legacy (COP17 and Tourism) • Research, awareness and skills development and knowledge management 	Not covered

South African Green Economy Model: Western Cape

After undertaking the South African Green Economy Modelling in 2011 Province specific assessment entitled the Western Cape Green economy Model (WeCaGEM) has since been initiated by UNEP and is currently being written up by the University of Stellenbosch.

The studies by Musango et al. (Musango, Brent, & Bassi, 2014) and (Musango, Brent, & Tshangela, 2014) were the first in South Africa to develop an integrated system dynamics model to understand and inform the green economy transition. The study showed that green economy interventions could result in a low carbon transition, utilize resources efficiently, and create additional jobs, without necessarily slowing the economy. The research and modeling specifically examined the green economy transition of the electricity sector in South Africa, based on the South Africa Green Economy Model (SAGEM). It was noted that a limitation of this research was that the analyses were undertaken at a national level; yet, many of the green economy investment interventions are taking place at provincial and local government levels. Stellenbosch University subsequently developed the Western Cape Green Economy Model (WeCaGEM), similarly to SAGEM, to examine the investment implications of a green economy transition in the Western Cape Province of South Africa (Musango, et al., 2017)(Musango et al., 2017). The results of the modeling are briefly outlined below.

Key outcomes from the agriculture crop production sector analysis

It was observed that the green economy would require significant financial investment in agriculture, which was projected to reach a total cost in excess of ZAR 3 billion, in current monetary worth, by 2040. This represents a major challenge for the transition to a green economy within the agricultural food crop production sector, which is integrally tied to the other sectors.

Key outcomes from the water sector analysis

As expected, the business-as-usual scenario modelling results show that the Western Cape Province will experience extreme water shortages, if the current way of living continues. However, it was established that, with green economy investment and effective management, the projected water demand could be met. The accumulated costs and capital investment associated with the proposed interventions is approximately 68% more by 2040 for the green economy scenario, when compared to the business-as-usual with climate change scenario. It was projected that an average yearly cost of approximately ZAR 700 million, in current monetary terms, would be required until 2040, in order to implement the interventions proposed by the green economy scenarios. The proposed interventions were ranked according to an indicative costing of the interventions, based on the marginal cost of water sources in a municipal area. Water conservation and water demand management was ranked as the least cost intensive intervention, while desalination was ranked as the most cost intensive.

Key outcome of the transportation infrastructure analysis

The business-as-usual results show that road freight haulage increases sharply from 32.66 billion (in 2001) to 95.87 billion (in 2040) ton-km per year. With a growing population, more goods are anticipated to be transported by road due to the fact that rail freight was seen to grow at a slower rate over the simulation period. The total kilometres of functioning roads decrease due to an increase in road freight haulage, and due to an increased number of passenger vehicles making use of the roads (due to an increasing population). Generally, the implications of increasing the service of public transport within the rail system are far greater on the infrastructure networks, than that of the road system. The desired roll-out of train sets from the year 2016, as identified by Prasa, would allow for the transport system to meet the demands of passenger transport in respect of the amount of scheduled trains operating per line annually. This, however, would put a great deal of pressure on an already ageing and deteriorating rail network. Different scenarios show more or less similar investment requirements to bring about a modal shift in freight transport by 2040; between ZAR 20 billion and ZAR 26 billion.



Key outcome of the electricity sector analysis

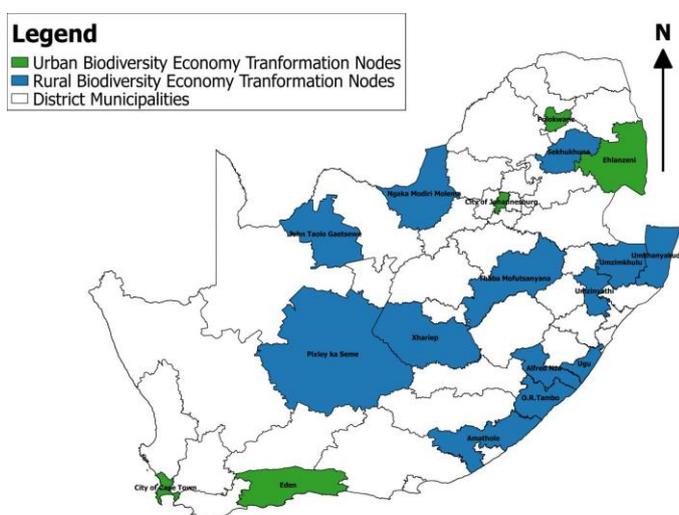
Although the Western Cape Government has not set out specific goals for the electricity sector, certain priorities in terms of electricity sector infrastructure development were identified. Developing natural gas infrastructure and renewable energy capacity are highlighted as important in the Western Cape Green Economy Report. Any investments in new electricity generating capacity would have to be sufficient to not only fill the current shortfall in electricity supply, but also to confront the expected growth in demand. Two scenarios allocated 0.4 and 0.7 percent of the Western Cape Province GDP to strategic investments in new electricity capacity respectively. Over the period 2015 to 2040, these annual investments amount to total investments of between ZAR 42.35 billion and ZAR 74.10 billion.

Development of the National Biodiversity Economy Strategy

During 2015 the National Department of Environmental Affairs released the draft National Biodiversity Economy Strategy developing this key sector within the Green Economy. The strategy clarifies that the *biodiversity economy includes the businesses and economic activities that either directly depend on biodiversity for their core business or that contribute to conservation of biodiversity through their activities.* (DEA, 2015)

The commercial wildlife and the bio-prospecting industries are a core focus of this strategy with these industries having reportedly contributed over R3 billion to the GDP in 2013. The target is to grow this sector's GDP contribution by 10% per annum. The BES also seeks to contribute to the transformation of the biodiversity economy through equitable access to resources, equitable and fair processes and procedures and equitable in distribution of resources (i.e. business, human, financial, indigenous species, land, water) in the market.

The Strategy has identified 18 Biodiversity Economy Transformation nodes, 13 rural and 5 urban districts across the nine provinces for development of small and medium size enterprises and community-based initiatives which sustainably use of indigenous biological and/or genetic resources. Two of the nodes fall within the Western Cape namely the City of Cape Town (Khayelitsha-Mfuleni) and Eden Municipality (Keurbooms/Avontuur).



The Western Cape Biodiversity Economy Strategy compliments the National strategy (Refer to **Section 7** for further information).

Figure 1: Map of the Biodiversity Economy Transformation (BET) nodes which are the transformation priorities of the BES

Box 2: Update on the Renewable Energy Independent Power Producer Procurement Programme (REIPPPP)

The Renewable Energy Independent Power Producers Procurement Programme (REIPPPP), has been lauded as SA's most successful public-private partnership programmes. Business Day (October 2016) reported the programme to have contributed 6,327MW of zero-carbon energy to the electricity grid. It has also demonstrated that the country is a viable and reliable destination for international and local consortia willing to participate in infrastructure projects (Business Day , 2016).

According to National Treasury, 92 projects had been selected by October 2015 to participate in the programme, attracting R193 billion in private sector investment, of which 28% is foreign investment. The Development Bank of Southern Africa (DBSA) has committed funding to Independent Power Producer (IPP) projects with a total capacity of 2,512MW, of which 1,507 MW relates to Projects under the REIPPPP and 1,005MW under the Department of Energy's IPP Peaker's projects (Business Day , 2016).

A study released by the Centre for Scientific and Industrial Research (CSIR) in 2015 estimates that the best priced nuclear new builds will have a lifetime energy cost of R1.17- R1.30/kWh. That compares with 62c/kWh for the most recent solar photovoltaic (PV) and wind IPP projects, and R1.03/kWh for the two recently announced IPP coal projects (CSIR, 2016).

The Western Cape region has secured approximately 17 billion in Renewable energy projects which has created more than 2,000 jobs in the province. In addition, several manufacturing plants have for renewable energy goods have established in the Western Cape providing investment to the value of R 500 million and resulting in more than 700 jobs (GreenCape, 2016).

3 Western Cape Green Economy

3.1 Green is Smart: Strategy Implementation

After three years of implementation of the Green Is Smart Strategy Framework (WCG, 2013), the portfolio functions under the guidance of a Working Group within the Provincial Transversal Management System. Green Economy projects are mainstreamed into departmental budgets and reporting lines. A Green Economy Forum for cross-functional exchange is used to ensure that collaborative problem solving continues and involves our partners in the private sector as well as inter-action across the different tiers of government. 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 Green Economy's place as a strategic priority was solidified through the Provincial Strategic Plan 2014-2019 (WCG, 2015), as well as being highlighted in a Provincial "Game-changer" on energy security. The Departments who have been directly involved in



developing this portfolio are Environmental Affairs and Development Planning (DEA&DP), Economic Development and Tourism (DEDAT), Agriculture (DoA), Human Settlements (DoHS) and Transport and Public Works(DT&PW).

3.2 Provincial Game changers

For each of the five Provincial Strategic Goals, the Provincial Strategic Plan (PSP) introduces a number of 'game-changers'. These are projects and programmes to catalyse the achievement of each goal.

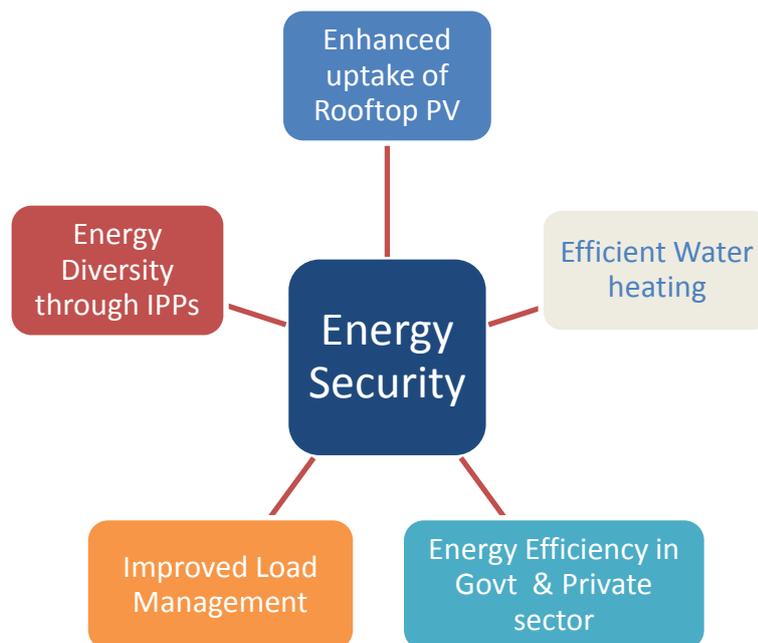
	Description	Key Performance Indicator
Energy Security	Driving the uptake of small-scale embedded generation (rooftop solar PV) by businesses and households, together with enhanced energy efficiency, to achieve energy security in the Western Cape	10% reduction in current Western Cape demand from Eskom by 2020, generated through alternative low carbon supply and energy efficiency measures <ul style="list-style-type: none"> Enhance uptake of Rooftop PV- 135MW by 2020 Efficient water heating – 155 000 by 2020 Energy Efficiency in Government Buildings – 30% reduction in usage by 2020 Diversity of Energy Mix – Inclusion of independent power producers by 2020
Vocational and Technical Skills	Apprenticeship: 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 Enable sectors: energy, ICT and Broadband	- 32 500 additional learners have completed work based learning by 2019 15% increase in learners with >50% in Maths by 2019
After-school	Creating real after-school opportunities for young people to participate in sport, cultural and academic activities	- Regular and sustained participation in after-school activities which contributes towards positive youth development: - 20% of no fee and low fee learners in the Province have access to quality after school programmes at least twice a week (1 12 000 learners)
e-learning	To enhance the teaching and learning experience of Western Cape learners, predominantly in maths and languages, through the use of technology	Wide Area Network (WAN)in all schools Universal Schools – 388 Computer Lab refresh Enhanced schools- 1200 smart classrooms Model Schools – 200 smart classrooms & 8000 learner devices
Alcohol Harms Reduction	Tackling alcohol abuse and addressing road safety through targeted Random Breathalyser Testing (RBT)	10% reduction in alcohol related injuries and fatalities by 2020
Better Living Model	Pioneering an integrated living model that can pave the way for restructuring the apartheid legacy of our cities and towns- in partnership with the City of Cape Town	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 (1805 –rental, FLISP and rent to buy households and 1800 open market households)
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 Stream 2: Broadband for the Economy Broadband is used by 70% of WC population by 2019 Stream 3: Transversal Applications Stream 4: Sector specific Initiatives

The Energy Security Game Changer

Security of energy supply is fundamental to every modern economy. As witnessed during the recurring national power shortages in 2014 and 2015, the disruption of electricity supply has an adverse impact on the personal lives of consumers and also impacts negatively on economic growth and the attractiveness of South Africa as an investment destination. While there are signs that the energy situation is improving, the outlook for security of supply remains uncertain.

The WCG and the City of Cape Town (CCT) have identified the availability of quality, reliable and clean energy as a key strategic imperative. Two Energy Security Design Labs were convened – in February and June 2015 – with representatives from the public and private sector as well as academia. This resulted in the development of a High Level Action plan to guide the focus of the game changer.

The goal of the Energy Security Game Changer is to ensure long-term energy security through the availability of reliable, diverse and low carbon energy to support economic and social growth in the Western Cape. The five strategies that will give effect to this are shown below:



Each lever has specific outcomes and targets leading up to 2020, all developed through a rigorous stakeholder engagement process

- Enhanced uptake of rooftop PhotoVoltaic (PV): increase the installed capacity of rooftop PV to Western Cape electricity supply to 135 MW (equivalent to the capacity of 4 x Western Cape based wind farms) by 2020.
- Enhanced uptake of efficient water heating (EWH), including Solar Water Heaters (SWH): increase the installed SWH or heat pump units to 155,000 by 2020.
- Reduced energy consumption in both public and private buildings: 30% reduction in energy consumption in provincial government buildings by 2020.



- Enhanced load management: optimally manage the electricity grid in order to reduce peak demand and minimise the likelihood and impact of load shedding.
- More electricity generated through wind, solar and natural gas: Increased diversity of electricity supply through Independent Power Producers (IPPs) by 2020.

The Energy Security Game Changer is a joint effort by the WCG, the CCT and the five largest local municipalities (Stellenbosch, George, Drakenstein, Saldanha Bay and Mossel Bay). Successful implementation depends critically on the continuous engagement and co-operation of multiple stakeholders within both government and the private sector.

The Energy Security Game Changer was officially launched on 19 March 2016, in partnership with World Wildlife Fund (WWF-SA), Green Building Council of South Africa (GBCSA) and the V&A Waterfront, coinciding with the annual Earth Hour celebrations. The message at the launch and going forward for the game changer is that if households and businesses invest in green technologies such as solar water heaters and solar photovoltaic (PV) panels and reduce their electricity use, then together we can achieve the goal of reducing our demand for electricity by 10% and create the space for our economy to grow.

3.3 GreenCape

GreenCape is a non-profit company established by the WCG as a result of the OneCape 2040 Vision and is aimed at developing all aspects of the Green Economy, with particularly emphasis on the renewable energy sector. The work of the organisation represents close co-operation between the Department of Economic Development and Tourism (DEDAT), the Department of Environmental Affairs & Development Planning (DEA&DP), Department of Agriculture (DoA), the City of Cape Town (CCT) and Wesgro.

GreenCape's key functions are as follows:

- Lobbying - providing the industry with access to all three spheres of government, and a unified voice when dealing with regulatory and legislative constraints;
- Clustering – acting as the focal point for encouraging the development of renewable energy, energy efficiency and waste/resource management value chains in the Western Cape;
- Skills development – while there are various government departments tasked with skills development, GreenCape has been tasked with ensuring that appropriate skills development curricula and facilities are developed for the renewable energy industry in the Western Cape;
- Promotional – promoting the Western Cape as an investment destination for “green business” – in partnership with Wesgro, and
- Developing cases for investment in green economy activities and infrastructure – including cooperating with local universities.

GreenCape's work in 2015/16 continued across the three thematic programme areas of energy, waste and resources. The specific focus of GreenCape's activities is informed by prioritised aspects in terms of unlocking investment, business opportunities and job creation.

Waste Economy Programme

- Investment in Waste treatment technologies - Transaction Advisor support to CCT and Stellenbosch Municipality provided.

Water Sector Desk

- Green Water innovations for business – A comprehensive framework was developed through the WRC project (GreenCape acts a reference group member) that links business risk, water scarcity, green innovations, green business models to aquatic ecosystem restoration and socio-economic development.

Agriculture Sector Desk

- GreenAgri Portal – Since the GreenAgri Portal launch in September 2015, the portal has had 2220 users (September 2015 – March 2016). The number of users visiting the website is showing an increasing trend. The portal is also the communication platform for the SmartAgri¹ project which was completed during March 2016.

Energy Efficiency Sector Desk

- Local success was noted in that Skyward Windows (Double Glaze manufactures in Atlantis) and LED lighting SA (LED in Paarden Eiland) opened new factories in the region. These new factories have added over 100 new jobs to the green technology sector – with Skyward creating 46 jobs and LED Lighting SA employing 70 staff, respectively.
- Following a rising need to support the local procurement of LED's by the WCG and Municipalities, GreenCape will be developing a database of locally assembled LEDs.

Renewable Energy Sector Desk

- Market Intelligence reports (MIRs) covering both the utility scale renewable energy market as well as the Energy Services market (comprised of both the energy efficiency and small scale embedded generation) were developed and distributed.
- A framework to assist municipalities adopt small scale renewable energy technologies, was developed and distribution to municipalities in the province.

Bioenergy

- Small-scale waste-to-energy projects in biodiesel and biomass continued to be supported.

¹ Developing a Western Cape Climate Change Response Framework and Implementation Plan for the Agricultural Sector



- The need for a comparative case for heat generation via solar energy versus using biomass, especially in the agri-processing sector has been identified.

Waste Sector Desk

- Cape Town, Drakenstein and Stellenbosch have undertaken their section 78 (3) analyses and have appointed Transaction Advisors to implement the respective interventions/ projects for dealing with their waste. This will allow for the private sector to engage municipalities in a number of ways, including Public Private Partnerships.

Green Finance Desk

- The World Bank Market Connect Programme formally started in December 2015, with the intention to develop pilot projects to test over the upcoming 12 months. The identified focus areas are; rooftop PV, Waste to Energy, Energy storage, Energy service at the base of the pyramid (low LSMs)

3.4 Links to other Western Cape work

2015/16 Areas of Work that support the transition to a green economy	
Smart living and working	<p>Better Living Challenge The BLC is a 5-year project (broken up into two challenges, i.e. BLC 1 and BLC 2) aimed at surfacing design innovation in the low-income housing market and supporting the commercialisation of viable solutions. The BLC takes place over a five-year period (2013/14 – 2017/18), with the Cape Craft and Design Institute (CCDI) are the implementing agents. (Refer to Box 3 for project detail)</p> <p>Green Public Procurement In State-Subsidised Housing The scope of this project is to guide municipalities and other developers of state subsidised housing regarding which environmental and financial criteria to take into account when procuring goods and services in housing delivery, so that the environmental and social impact is minimised. The project started 29 February 2016 and is to be completed by 31 January 2017.</p>
Smart Mobility	<p>City of Cape Town MyCiti Electric Bus Project</p> <p>The City is extending the footprint of the MyCiti service across the city with a responsibility to lower the carbon emissions and the impact of pollution on the urban environment. As such the City is proceeding with a pilot project to expand the current fleet of diesel buses with 10 low-floor electric vehicles. The City will offset the energy requirements of the buses through photovoltaic technology and also use this technology to power the bus depots and workshops. The introduction of electric buses will contribute to the City's developmental and sustainability objectives in that:</p> <ul style="list-style-type: none"> • The electric buses will be assembled locally and the manufacture of the bus bodies is required to meet minimum local content and production standards; • The contractor will be employing local staff and will have to source some of the bus components from local suppliers; • The City is seeking a more energy efficient and economic bus fleet; • There will be reductions in vehicular emissions and reliance on fossil fuels; and • There will be economic / developmental opportunities to foster investment and skills development in the bus manufacturing and solar photovoltaic industries in Cape Town.
Smart Ecosystems	<p>Air Pollutant and GHG Emissions Inventory as an informant to Climate Change Response The project (2015-2020) focuses on co-ordinating and managing effective air quality management, reporting and atmospheric emission licensing systems. The goal is to ensure compliance of all regulated facilities in the Western Cape Province so that priority air pollutants and GHG emissions are reduced. The development of an Annual State of Air Quality Management Report is developed and provides information on air quality monitoring, compliance and enforcement and the Air Pollutant and GHG Emissions Inventory which contains all emission sources (area, point and non-point). The information is used to inform airshed planning in the Western Cape</p>
Smart Agri-production	<p>The FruitLook project provides information on actual crop water use and other growth parameters on a weekly basis during the irrigation season to irrigation farmers via the FruitLook web portal.</p> <p>The Conservation Agriculture (CA) programme of DoA has become a prominent climate smart production practise in the grain industry and as such was elected for discussion as a case study in the research and compilation of the Western Cape Climate Change Response Framework and Implementation Plan for the Agricultural Sector – 2016 (SmartAgri), which was launched on the 17th of May. CA has been identified as one of the six key priority projects which will fast track climate change resilience of the agricultural sector in the Western Cape.</p> <p>Bitou Agro-processing The aim is to develop local community businesses based on ecosystems goods and services, to contribute to improved biodiversity and to establish biodiversity based livelihoods Timeframe: April 2015 to March 2016</p> <p>Establishment of a Community of Practice (CoP) for the Sustainable Development of the Honeybush Industry The aim of the project is to promote transformation of the industry, Improve permitting processes and ease compliance, improve livelihoods through sustainable utilisation of honeybush. This work will be continued in 2016/17 with the development of "Guidelines for the sustainable wild harvesting of Honeybush".</p>
Smart Enterprise	<p>Renewable Energy Training Project: DEA&DP commenced a project to develop skills in the renewable energy sector utilising the Expanded Public Works Programme to select and train 14 beneficiaries with 4 months of theory and 2 months of practical training in the areas of installation of PV panels and associated electrical skills and basic plumbing. Industry role players were approached so that training recipients could be absorbed into the formal workplace for further on the job experience. (Refer to Box 5 for project detail)</p> <p>Research on Baselines and Impact of Biodiversity Economy (BE) Projects on Social and Ecological systems Case studies are being developed to understand how Biodiversity Economy Projects contribute to people's lives in terms of improved quality of live, as well as improved biodiversity and landscape functionality. Research will also determine opportunities for Improved investment in the BE Sector</p>



Box 3: Better Living Challenge (BLC)

In 2013, the Premier hosted "Smart Innovation on Tour" which showcased green innovations to government and business leaders and saw the launch of the Better Living Challenge (BLC). The BLC is a design competition that aims to support the improvement of the living conditions of low-income communities in the Western Cape through increased availability of sustainable products and solutions that improve quality of life. The Cape Craft and Design Institute (CCDI), a special purpose vehicle of the WCG, became the implementing agent.

High-level project objectives:

- Increased engagement by designers, manufacturers, retailers and others in the development of products, services and systems for the low-income housing market
- New/improved products in the market
- Increased sales of local products, services and systems
- Increased choice of a range of home improvement products, services and systems

The BLC was a recognised project of the World Design Capital (WDC) 2014 programme. WDC2014 was used to promote design for social benefit and upliftment, and as such, the BLC fitted well with those aims.

The first BLC Competition (BLC 1) was held in 2014 and called upon manufacturers, designers, inventors and entrepreneurs to submit new or existing solutions that meet the needs of the low-income market and which enable people living in low-income communities to improve their lives. They included building materials, low-carbon products, water capturing and drainage systems, eco-friendly flushing toilet systems, fire-safety products (particularly for shack dwellings) and interior items for storage and comfort. The elements of BLC1 were Innovative Design, Innovative Financial Packages and Innovative Marketing. The BLC 1 aimed to facilitate the production cycle of these solutions from research and concept stage, to prototype, testing and production, through to marketing and distribution of finished product.

The BLC1 stimulated the entry of 130 solutions. Through a selection process guided by 47 experts, these were reduced to 22 finalists and 33 exhibitors for the BLC Showcase held at the Station Forecourt from 28th October to 8th November 2014. The three winners were chosen through a voting process that included a formal judging panel, facilitated community votes and public votes. The winners, one in each category, were awarded R500, 000 in support services to help refine their solution and take it to market. 2015/2016 was the third year of the project and focussed on providing bespoke support to the winners of the first challenge. This support is a combination of sponsored support, paid for services and CCDI support.



Figure 2: Winner in the Comfortable Home category of the Better Living challenge was a low-cost battery-operated early warning fire detector unit – marketed under the brand name Lumkani (Photo courtesy of CCDI)

3.5 Policy and Investment

Developing a green economy requires incremental decoupling of resource use and environmental impact from economic growth. It further requires a realistic valuation of direct and indirect costs as well as factoring in opportunity costs especially for non-renewable resources. As mentioned earlier in this report the World Economic Forum declared in its 2016 Risk Report (WEF, 2016) that extreme weather events, poor response to climate change, natural catastrophes, biodiversity loss and ecosystem collapse, water scarcity and energy price shocks were within the top ten global risks to economic growth. This risk awareness is driving the finance and insurance sectors to become catalytic in the transition to a greener growth path as financial instruments incentivise and penalise development based on its risk rating in relation to such challenges.

WCG finance-related projects for 2015/16 include: Eco-Invest Phase 3, Green Income Investment Mapping within CapeNature, 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.

In difficult economic times finding efficiencies within existing manufacturing and business processes is key to survival and the National Cleaner Production Centre (NCPC) reports 1 Billion Rand worth of savings and a million tonnes of carbon emissions saved based on their projects over the past 12 years. Several businesses facing closure were able to turn their fate around based on NCPC supported investment in such efficiencies (Resource, 2015).

3.6 Green Economy Communications



The 110% Green programme is the Western Cape Premier's initiative with the aim of promoting and growing the green economy in the Province through networking and brand building. Using “communicating by doing” the initiative aims to build the green brand of the province and encourage practical actions in linking green and the economy from organisations working in the Western Cape. The 110% Green Programme of the Green Economy was established in 2012 parallel to the development of the Green Economy Strategy Framework.



Providing a platform that stimulates people and organisations to build an innovative and dynamic Green Economy, 110% Green encourages organisations to “pick up” the flag and invest in ways that support green growth. To date 160 organisations have committed to this vision. The 110% programme takes the form of events and tours which bring together key role players from within government (at all levels), business, academic institutions and NGOs to showcase the work being done in the green economy in the province. 110% Green also relies heavily on digital media (Facebook and Twitter) by sharing information on what is being done within the Green Economy in the region as well as circulating relevant stories from around the world to over 1300 followers. The main communications platform remains the 110% Green website



(www.westerncape.gov.za/110green/) which is regularly updated. These forms of media were particularly used during 2015/2016 to promote the work being done under the Energy Security Game Changer which boosted the number of social media followers.

The 2015 110% Green Annual Event took the form of a tailored Business Opportunity Workshop for the 110% Green Flagships and identified Waste Industrial Symbiosis Project (WISP) members which took place on June 2015. Thirty eight organisations participated and 567 potential matches for waste “swops” were identified.

Box 4: Western Cape Industrial Symbiosis (WISP)

The Western Cape Industrial Symbiosis Programme (WISP) is a service which is sponsored by the 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) to be exploited by other businesses, enhancing profitability and sustainability.

WISP works with a broad range of industries and companies of various sizes to create mutually beneficial links between member companies. No company is too big or too small to benefit from WISP and membership is free regardless of sector, size or turnover. Table 2 below provides a summary of the WISP achievements since the project's inception.

Table 2: Aggregated list of verified outcomes of WISP (GreenCape, 2016)

Key performance indicators	Year 1 (2013-2014)	Year 2 (2014-2015)	Year 3 (2015-2016)	Cumulative to date (2013-2016)	Estimated five year impact¹
Waste diversion (Tonnes)	59	339	1 357	1 752	8 455
Additional revenue (Rand million)	2.90	1.28	1.47	5.11	7.40
Cost savings (Rand million)	2.70	2.30	3.14	7.04	14.4
Private investment (Rand)	100 000	-	-	100 000	0.10
Fossil GHG savings (Tonnes CO ₂ e)	1 100	1 500	2 800	4 900	22 100
Saving: Electricity use of SA households (kWh)	290	400	750	1 320	8 930
Jobs Created	11 temporary 4 permanent 0 indirect 1 induced	0 temporary 6 permanent 2 indirect 1 induced	3 temporary 2 permanent 3 indirect 3 induced	14 temporary 12 permanent 5 indirect 5 induced	14 temporary 12 permanent 5 indirect 5 induced



4 Western Cape Green Economy Indicators

This is the third 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 and tracking of significant trends. 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 limited data points available it is not yet possible to infer any strong trends however, there are some positive indications.

Energy

There continues to be an increase in energy produced from renewables by IPPs in the province moving from 421.82 MW in 2013 to 497 MW in 2014. This will continue to rise with the operationalization of the REIPPP projects. However the new investment in large scale renewable is tailing off until the next round of REIPPP project are awarded. Small Scale Renewable energy investment such as rooftop PV has continued to gain momentum.

Water

Water demand has continued to climb with both economic growth and population growth. This is a concerning trend especially since the country is experiencing a multi-year drought which will see water restrictions and tariff increases being implemented as demand control measures which will impact on water dependent industries. There is slight reduction in the Green Drop performance which is an index for wastewater treatment and this may be related to both the difficult fiscal environment and the drought. This does however provide an opportunity for those in the field of greywater reuse and water-wise technologies to increase their market share.

Food insecurity

Food insecurity has increased and which may be due to the challenging economic outlook and unemployment rates intensified by food price increases relating to the drought. Food security has become a priority focus for WCG and during 2016 a strategy was developed to respond to this concerning trend.

Waste

Solid waste production has decreased and diversion from landfill has dramatically improved from 9% in 2012 to 38% in 2014. These figures are very positive and whilst improved reporting may be a factor in this improvement, it is a trend worth supporting as it is positive for the further development of the Waste Economy. However these

waste diversion statistics are subject to change as soon the regular reporting of waste flows to the Integrated Pollution and Waste Information System occurs as this will increase the certainty in the statistics.

Aquaculture

Aquaculture had a positive trend between 2012 and 2013 and according to Operation Phakisa reporting the industry continues to grow. The Department of Agriculture, Forestry and Fisheries (DAFF) annual aquaculture report with detailed data is not yet available.

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



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

Options that stimulate resource efficiency should not be considered a luxury or a “green premium” when it is becoming increasingly clear that it is the cost of remaining in business or maintaining a decent standard of living, now as well as in the future. Greener or more sustainable procurement choices offer:

- Short to long-term cost and natural resource savings
- Risk management
- Future-proofing/ increasing climate resilience
- Improvements in infrastructure and service delivery through innovation

The World Economic Forum acknowledges the importance of such factors when its top ten risks are annually reviewed and shows increasing vulnerability of the economy to resource scarcity and both natural and man-made disasters. **Table 3** shows the WEF 2016 top ten risks in terms of likelihood and impact.

Table 3: World Economic Forum Global Risks Report 2016 Top Ten Risks

	
<p>Global risks in terms of likelihood</p> <ol style="list-style-type: none">1) Large-scale involuntary migration2) Extreme weather events3) Failure of climate change mitigation and adaptation4) Interstate conflict with regional consequences5) Major natural catastrophies	<p>Global risks in terms of impact</p> <ol style="list-style-type: none">1) Failure of climate change mitigation and adaptation2) Weapons of mass destruction3) Water crises4) Large-scale involuntary migration5) Severe energy price shock

(Adapted from WEF, 2016)

Energy and Carbon Emissions

The International Energy Agency reported in 2016 that fossil fuel derived energy consumption and carbon emissions has begun to decline as we see the impact of investment in renewable energy especially wind and solar. (IEA, 2016) There however remains significant threat to economic growth, social development and natural resource bases. Nationally South Africa has committed to reducing Greenhouse Gas (GHG) Emissions and supported the Paris Agreement in December 2015² and ratified in 2016. These clear intentions to decouple economic growth from high carbon fossil fuels and move towards a low carbon economy are supported and mirrored in the WCG's Climate Change Response Strategy (2014).

Furthermore, as global GHG emissions continue to rise as a result of lagging emission reductions and collective international action, South Africa, and in particular the Western Cape, is already facing changing climatic conditions and an increasing frequency in likely associated disasters (such as floods, droughts, fires, storm surges, extreme temperatures, hail, etc.). Key economic sectors in the Western Cape, including agriculture and tourism are already at risk. Government investments into infrastructure are potentially also at risk from climate related disasters.

Direct damages alone between 2003 and 2014 from climate related events in the Western Cape amounted to over R5 billion (RADAR, 2016). The WCG, as a result, is taking the lead in preparing for, and developing, long term climate change responses across the sectors through the Western Cape Climate Change Response Strategy and additionally, in developing sector specific climate responses such as the SmartAgri Climate Response Framework and Implementation Plan for the Agricultural Sector (Western Cape DOA, 2016).

National constraints on energy supply capacity have accelerated small scale renewable energy generation by companies and some households for their own consumption, using a range of readily available technologies. Local governments are aiming to facilitate and support such initiatives, although there are many regulatory, financial and governance challenges that must be overcome. The CCT, for example, has entered into its first small-scale embedded energy generation agreement with the Black River Parkway Business Park, connecting its solar PV plant to the city's grid. Similar initiatives are being sought across municipalities across the region.

² 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.



5.1 Water and Sanitation



Ensuring a sustainable and resilient development environment relies crucially on the water availability and quality. New approaches incorporating innovative design solutions are being promoted and piloted, which 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 and out dated practices 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 DWAS.

The project promotes and advocates for the development of the green economy, supports agriculture (a green economy priority sector) and fosters inclusive access to natural resources, notably, clean water and sustainable living. 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
3. To ensure sustainable resource use efficiency and ecological integrity



Based on the effective coordination of BRIP, the identification of initiatives under the green economy in this region was proposed, allowing for the crowding in of effective environmental and socio-economic interventions within a geographically focused frame. Two linked projects, which are part of BRIP (Langrug Systems for People's Access to a Clean Environment [SPACE]) and aligned to the WCG green economy programme (Genius of Place), have been amalgamated for the Genius of Systems for People's Access to a Clean Environment (SPACE), which is to be initiated through the support and collaboration with Stellenbosch Municipality (Stellenbosch Municipality, 2014). The project adopts an approach of intensive community engagement coupled with technical relevant, innovative solutions to managing the waste flows, mainly solid waste and contaminated storm water, for improved protection of the natural environment, along with socio-economic upliftment of the community. Working with the Langrug Community, an informal settlement on the outskirts of Franschhoek, roles and responsibilities, as well as the terms for project structures, have since been developed with the project being formally initiated in September 2015. The project is being implemented through three phases, the first of which aims to target grey water disposal and storm water contamination. The remaining two phases include the development of an innovative waste management system for upcycling and creating value, linked to microenterprise partnership opportunities and the facilities needed to undertake such operations as part of the final phase.



5.2 Biodiversity

Biodiversity underpins the functioning of an economic system. It provides not only intrinsic values like heritage value, but also the values associated with ecosystem services (like water provisioning, protection against natural disasters, soil fertility, etc.) and natural resources (food, fuel, fibre, medicine, etc.). These goods and services are natural capital assets. Needing to understand and quantify the province's natural capital and its potential contribution to green economic opportunities, the DEA&DP initiated the Western Cape (WC) EcolInvest Project. Launched during the 2013/2014 financial year it culminated



through a phased approach over the ensuing years in the Draft Western Cape Provincial Biodiversity Economy Strategy (PBES) on 31 March 2016.

The PBES is a five-year strategy that is aligned with the National and Provincial Medium Term Strategic Frameworks 2014-2019, the National Biodiversity Strategy and Action Plan (NBSAP) and the National Biodiversity Economy Strategy (NBES) and it represents the implementation of actions proposed in the Provincial Biodiversity Strategy and Action Plan (PBSAP). It responds to the national and provincial economic growth and development strategies as well as other biodiversity-related and economic policies and laws internationally, nationally and provincially.

Whereas the initial EcoInvest phases were aimed at investigating priority ecosystems, the potential of obtaining private sector investment into biodiversity and ecosystems goods and services and mobilising identified priority nature-based economy value chains, the BES elucidated on the required actions to set in motion key identified biodiversity economy opportunities.

Eco-Invest Phases I, II and III and the PBES identified several value streams and potential biodiversity economies, evolving over the period that could leverage investment in natural capital in the Western Cape Province including:

- Leveraging value from estuary users for reinvestment into estuary management
- Development of natural products businesses (e.g. Bioprospecting & wildlife)
- Payment for Ecosystems (PES) concepts like unlocking carbon sequestration, alien biomass economies & improving water provision through an Ecosystems-based Adaptation (EbA) approach.
- Leveraging investment from the private sector (through e.g. corporate social investment, enterprise development and skills development) as well as investigating environmental/biodiversity financial instruments (e.g. green bonds, green tax, etc)
- Investigating the social and ecological impacts of selected BE projects

Some of these value streams were tested through feasibility assessments and concept plans that were included in the PBES for implementation. This saw the realisation and further development of several projects including:

- a) The Bitou Agroforestry BBBEE Project. This project leveraged R8.6 million from the National EPWP Environment Protection Infrastructure Programme (EPIP) for two natural product businesses in disadvantaged communities in Harkerville and Kranshoek. The businesses are based on the growing of Honeybush tea and Sceletium (AKA Kougoed, a mood enhancing herb), trees, high value greens as well as vegetables to support local food security. Benefits during this period

included job creation of about 60 community members, improvement of housing, provision of electricity and establishment of a crèche.



- b) The development of business plans for Alien Biomass Value Added Industries (AB VAs) in the province. A Honeybush workgroup was established in July 2015 and a terms of reference was developed that would lead to the establishment of a functioning Honeybush Community of Practice that will aim to ensure the sustainable development of the honeybush industry whilst protecting the natural resource

- c) The development of business plans for the "Carbon Spekboom" value chain. The next steps include building the required social capital and intervention strategy to unlock and develop the Carbon sequestration value chain.

- d) Building the required social capital and intervention strategy to ensure the sustainability of the Honeybush industry (A provincial natural capital resource under severe pressure from wild harvesters). This should also in the very near future lead into the development of a community of practice and guidelines for the sustainable wild harvesting of honeybush.

The PBES continues to develop and evolve projects and a programme for annual implementation for the period 2015 to 2020 is underway.



5.3 Jobs and Skills

EPWP Environmental and Culture Sector Green Jobs

The Expanded Public Works Programme (EPWP) started with the Working for Water programme to clear invasive aliens and two decades later is the largest Public Employment Programme in the world covering the Social Sector, Infrastructure, Non-State Sector and the Environment and Cultural (EAC) Sector. For many years the programme reported mostly on work opportunities and “full time equivalents” created, but there is a fundamental shift which has occurred in the EAC Sector to include monitoring and evaluation. This shift can be characterised as a move from what was merely a measurement of the programme's socio economic impacts i.e. job creation, impact on poverty alleviation of the vulnerable



groups to an expanded impact measurement that includes the programme's environmental impacts. The EPWP programme consists of 6 pillar programmes under which implementing bodies such as Municipalities and Provincial Authorities are expected to report on their respective project outputs. These are:

- Sustainable Land Based Livelihoods,
- Coastal Management,
- Tourism and Creative Industries (which not many implementing bodies report on)
- Waste Management
- Parks and Beautification and;
- Sustainable Energy

Table 4: Green Job creation achieved in the Western Cape during 2015/2016 through EPWP (NDPW, 2016)

Sphere	Year	Performance Work opportunities (WO)	Target WO	Performance Full Time Equivalents (FTE)	Target FTE	No of Projects
National	2015/16	145 475	229 208	55 216	87 441	2 588
Provincial	2015/16	2 233	1 534	918	477	188
WC Municipalities	2015/16	5 623	5 623	1 684	4 237	297

Box 5: Renewable Energy Training Project

The DEA&DP is currently running the Renewable Energy Training programme for its second financial year. The project is facilitated by *Ithemba Labantu Lutheran Community Centre* who was awarded the training contract. The Training includes 4 months of theory and 2 months of practical training in the areas of installation of PV panels and associated electrical skills and basic plumbing. Fourteen beneficiaries have graduated from the first round in May 2016 and the 2016/17 funding makes provision to accommodate 10 more beneficiaries. Industry role players were requested to provide recipients with experiential training to ensure employability. After completing the course, recipients are awarded a certificate of competency. The programme, responds to the need for upskilling and building capacity for people to enter the renewable energy industry. It therefore contributes to the WCG Energy Security Game Changer, job creation, entrepreneurship and local economic development.

5.4 Sustainable Agriculture

The agricultural sector of the Western Cape Province plays a key role in the provincial economy and food security. The sector has considerable potential to drive economic growth, job creation and social development in rural areas. As South Africa becomes progressively more urban, the agricultural sector remains critical in supporting important rural-urban linkages and a complex food system. This is underscored in the National Development Plan (NDP) and the Provincial vision for economic and social development (OneCape-2040). However, the sector is highly resource-intensive, with a high reliance on land, water and energy, and development will increase these needs.

At the same time, the agricultural sector is particularly vulnerable to a changing climate, both directly and indirectly owing to the projected impacts on resources such as soil, water and energy. Climate projections for the province indicate continued warming of 1.5°C to 3°C by 2050, more frequent hot days and heat waves, changing rainfall patterns, longer dry spells, and more frequent droughts, heavy rainfall, flooding and wildfires. These changes present a real threat to the agricultural sector, with repercussions along the economically important agricultural value chain. Climate change is seen as an additional stressor that amplifies already existing risks such as water and energy insecurity and escalating food prices, and has the potential to undermine hard-won development gains. For example, the 2015-2016 countrywide drought has cost the economy in the region of R16 billion and consumers will pay nearly 30% more for a basket of staple foods in 2016 compared to the previous year. Losses associated with the current drought are approximately R2-4 billion in the Western Cape by February 2016.

A strategic and inclusive approach can build long-term resilience to climate change through “climate smart agriculture”, and place the sector on a clear path towards the Green Economy. The WC DoA and DEA&DP have partnered with the University of Cape Town's African Climate and Development Initiative (ACDI) to develop the Western Cape Climate Change Response Framework and Implementation Plan for the Agricultural Sector (Western Cape DOA, 2016), widely known as the SmartAgri Plan.



Linkages between SmartAgri and the Green Economy

The agricultural sector can and should play a key role in the delivery of a Green Economy in the Western Cape, by contributing significantly to enhanced water use efficiency, energy use efficiency, waste reduction and beneficiation, and the transition to low-carbon technologies and practices. The valuable export sub-sector faces the challenges of reducing its carbon footprint and responding to and embracing emerging global carbon pricing strategies.

Box 6: SMART-AGRI Climate Change Agricultural Sector Plan

The SmartAgri Plan builds on the Western Cape Climate Change Response Strategy (WCCCRS 2014) and its' Implementation Framework, specifically the focus area of "Food Security". It also aligns closely with the current five-year Provincial Strategic Plan (Provincial Strategic Goal 4) and the WCG: Agriculture Strategic Goals. One of the seven Departmental Goals is "Optimise the sustainable utilisation of water and land resources to increase climate smart agricultural production".

SmartAgri responds to the need for a practical and relevant climate change response plan specifically for the agricultural sector of the Western Cape Province. It will guide and support the creation of greater resilience to climate change for farmers, agri-businesses and other stakeholders across the province, by addressing both mitigation and adaptation needs. It covers a continuum of time scales, from immediate responses to severe weather events such as drought, to long-term transformations within the agricultural sector aimed at achieving greater resilience, competitiveness and livelihood opportunities in spite of climate change and growing resource constraints. The SmartAgri Plan proposes four Strategic Focus Areas (SFA):

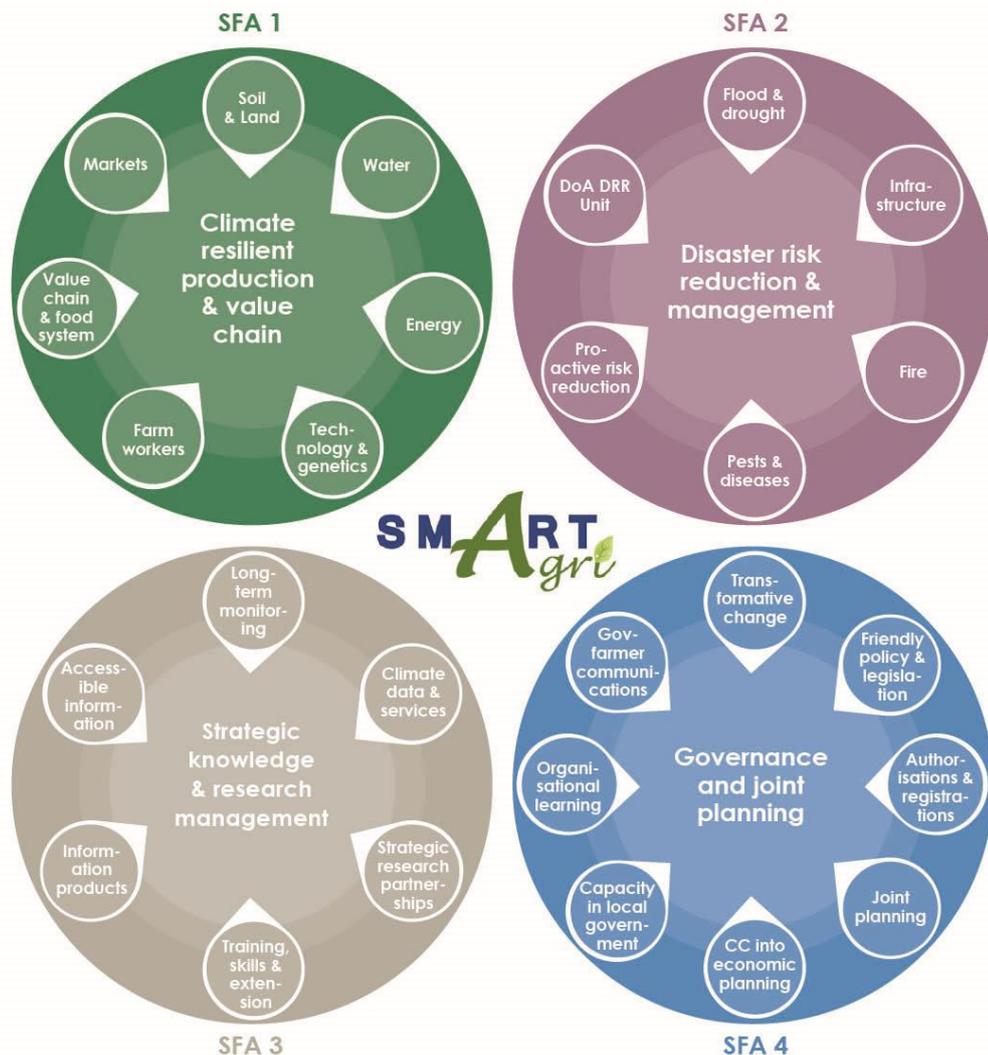
SFA	Description
1	Promote a climate-resilient low carbon production system that is productive, competitive, equitable and ecologically sustainable across the value chain
2	Strengthen effective climate disaster risk reduction and management for agriculture
3	Strengthen monitoring, data and knowledge management and sharing, and lead strategic research for climate change and agriculture
4	Ensure good co-operative governance and institutional planning for effective climate change response implementation for agriculture

The transition of the agricultural sector may well, in some areas at least, need to take a "leapfrog" approach as opposed to incremental steps, particularly in aspects of social change and optimised resource use approaches. If embraced, such an approach could open agriculture to new technologies, investment opportunities and jobs in the green economy, that are all requirements for the building of climate resilience. The SmartAgri Plan, as a whole, tries to balance such transformative change against more measured and incremental changes, so as to ensure continued stability and retention of existing livelihoods.

The SmartAgri Plan includes six Priority Projects that have been chosen for immediate implementation, to catalyse the early adoption of important climate change response interventions with high impact. The set of six projects include both adaptation and mitigation activities, identified through extensive engagement with stakeholders, and evaluation according to their scientific, agricultural and socio-economic merits. Jointly these projects will accelerate the implementation of the SmartAgri Plan.

The recommended Priority Projects include:

1. An integrated knowledge system for climate smart agricultural extension
2. Conservation Agriculture for all commodities and farming systems
3. Restored ecological infrastructure for increased landscape productivity, socio-ecological resilience and soil carbon sequestration
4. Collaborative integrated catchment management for improved water security (quality and quantity) and job creation
5. Energy efficiency and renewable energy case studies to inspire the transition to low-carbon agriculture
6. Climate-proofing the growth of agri-processing in the Western Cape



5.5 Infrastructure and Information and Communications Technology (ICT)

5.5.1 Infrastructure and Built Environment

WCG's Department of Transport and Public Works (DTPW), Public Works Green Economy Steering Committee was established in 2014. The aim of the committee is to assist the department fulfilling its commitment to green building principles, by coordinating and driving green initiatives in the work of the Provincial Public Works Branch, 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 Provincial Strategic Goal (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
- 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.

In terms of greening communities, 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

WCG Property Efficiency Report (2015/16) and Office Modernisation progress

Establishing measurements of existing resource use patterns in WCG buildings is the first step toward being able to achieve resource efficiency. Reporting on these identified resource use patterns and implementing changes to improve on efficiencies is the second step in the process. Towards this goal, the Public Works Branch released the first Property Efficiency Report (PER) (2011/2012) benchmarking and publically reporting the resource footprints of all government-owned and some leased properties within the Cape Town Central Business District (CBD). The PER is an annually published report that evaluates the state of the provincial property estate, which reviews, analyses and monitors space and sustainability efficiencies within the provincial estate. The 2015/2016 report now examines the performance of 36 offices (2 076 975m²) and measures how the portfolio is performing with respect to efficiency and sustainability, how it can be improved and monitors this critically on an annual basis as a performance measure (DT&PW, 2016). It sets targets and timelines for making improvements and to monitor progress. The establishment of efficient,

sustainable and modernised workplaces will also deliver significant cost savings, reduced carbon footprint and drive productivity gains. (NDPW, 2015)

A target set by the Energy Game Changer was a 30% reduction in energy consumption in the portfolio being monitored within the PER by 2020. (Refer to **Section 3.2**)

Table 5 Summary statistics for the Property Efficiency Report 2015/16 (DT&PW, 2016)

	All WCG Offices		CBD Cape Town Offices		Non CBD Cape Town Offices		Private Sector average	
	2014/15	2015/16	2014/15	2015/16	2014/15	2015/16	2014/15	2015/16
Net Area	206 524m ²	206975m²	147834m ²	145285m²	61690m ²	61690m²	-	-
Accommodated staff	8642	8658	6336	6440	2306	2218	-	-
Cost per FTE	R56 148	R58 169	R58 0310	R58 517	R50 206	R57 157	R31 418	R31 418
m ² /FTE	24.3m ²	23.9m²	23.3m ²	22.6m²	26.8m ²	27.8m²	14.7m ²	14.7m²
Energy consumed per FTE	4319kWh	3817kWh	4682kWh	4419kWh	3321kWh	2066kWh	4556kWh	4375kWh
Water consumed per FTE	20.3m ³	26.1m³	16.3m ³	20.9m³	31.1m ³	39.7m³	32m ³	29.7m³

**FTE= Full time equivalent

The findings of the 2015/2016 PER show a reduction in energy use of 6% but an increase in water use compared to the 2014/2015 report. The report states that some of the poorer performance is due to improved data which incorporates previously hidden usage and costs. There is significant scope for improvement to resource efficiency within the WCG Estate and opportunities for retrofits and green technology and smart metering adoption.

Sustainability of Schools Infrastructure

DT&PW Education Infrastructure undertook work to solidify the norms and standards for incorporating sustainability into school infrastructure across the Province. (DT&PW, 2016) A comprehensive approach was taken to consider existing initiatives as well as possible future options.

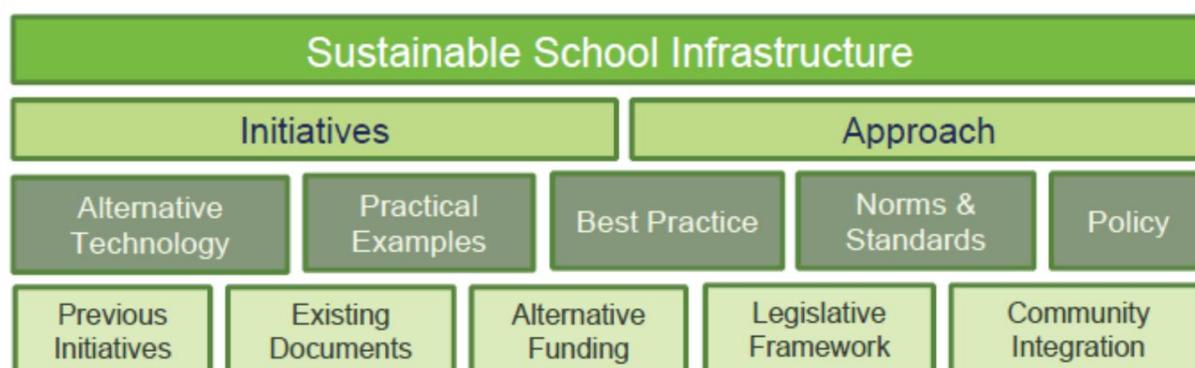


Figure 3: Sustainable School Infrastructure approach



The report recommended the following infrastructure interventions to improve sustainability of school infrastructure and support the green economy in the Western Cape:

- Establish an agency to administer private investment in school infrastructure
- Establish provincial records and benchmarks for consumption (electricity & water), production (waste & carbon footprint) and classroom & outside temperatures.
- Introduce energy, water and waste performance certificates.
- Analyse the schools to be built new in the next five years, identify the most frequent type and engage stakeholders of affected schools to improve on the layout efficiency.

Box 7: Karl Bremer receives 5 Star Green Rating

The major innovations which caused the Karl Bremer building to receive 5 Green Building Stars are described below:

1) Blackwater Treatment Plant

The project has been designed with a blackwater treatment plant (BWTP). All fixtures and fittings will discharge into the BWTP (i.e. all basins, showers, toilets and urinals). BWTP's are typically installed only where a municipal sewage connection is unavailable. It is uncommon to install a BWTP where a municipal connection is available (like that of Karl Bremer Office Accommodation). It is anticipated that no 'blackwater' will be discharged to municipal sewer.

2) Treated Blackwater Supplying Recycled Water to HVAC Cooling Towers

The project has an on-site blackwater treatment plant, where the treated water is re-used for HVAC cooling tower make-up water supply. The Project Team has done extensive investigation into this. The design estimates are that the treated water will supply over 76% of the total annual HVAC water demand (i.e. approximately 1.1 million litres of mains potable water saved per annum). When treated water storage tanks are full, excess treated water will overflow to the irrigation storage tanks. If irrigation tanks are full, the water will overflow to the retention pond which will replenish ground water.

3) **Harvesting of HVAC Bleed-off for Re-use**

HVAC bleed-off is harvested and re-used for toilet & urinal flushing. The harvested bleed-off is stored in the same storage tanks as the harvested rainwater. These tanks supply supplementary water for the flushing of toilets and urinals. Because of the additional harvested water from the HVAC bleed-off (i.e. in addition to rain water), it is probable that only harvested water will be used for toilet & urinal flushing (i.e. no mains potable water).

4) **1-in-100 Year Storm water Infiltrated into the Ground**

The storm water infrastructure for the development has been designed such that for storm events of up to and including 1-in-100 year events, storm water will not leave the site by entering the municipal storm water infrastructure. This is achieved due to four Bioretention areas. These Bioretention swales are incorporated as part of the natural landscaping of the site. The Bioretention areas are designed in such a way that they treat and infiltrate the storm water into the ground (i.e. natural water table).

Due to the above innovations, 100% of all water (waste water and storm water) is either re-used onsite or infiltrated to groundwater (i.e. no water leaves the site in any municipal infrastructure).



5.5.1 Information and Communication Technology (ICT)

The potential for ICT to enable resource efficient ways of living in cities is widely documented. By incorporating best practice into policy and strategy, ICT can support the transition to a low-carbon economy and the broader sustainable and inclusive development agenda (GESi, 2015). The benefits of ICT-enablement in the economy include the ability to incorporate systemic improvements, efficiencies and responsiveness within cities and across a range of industries. In addition, Internet access enables access to information and services that can lead to empowerment for individuals, households, communities and businesses which leads to greater productivity, competitiveness and participation in the economy and improved livelihoods (World Bank, 2016).

The National Broadband Policy aims to achieve universal broadband access by 2019 (DOC, 2013). In light of this, Western Cape Government 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 five streams, namely:

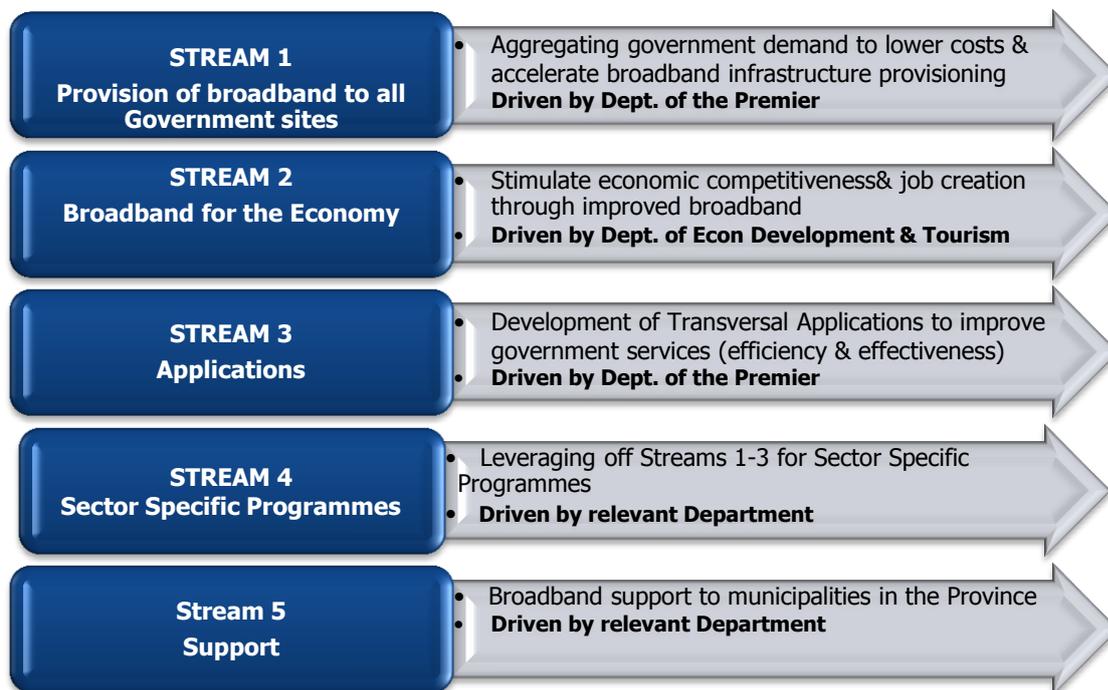


Figure 4: Broadband Game Changer activity streams

6 Green Economy in Municipalities

In May 2015, UNISA in partnership with DEA and others held the 1st international conference with the theme “Innovation for Sustainability under Climate Change and Green Economy” which highlighted the need to prepare and support the country's 278 municipalities as focal points for implementation of a greener and low carbon economy. The South African Local Government Association (SALGA) noted that the key constraints were financing models and institutional readiness. It was determined that more adaptable investment frameworks are required and municipalities need to craft a position on what human and financial resources will be required to make the transition.

The conference further highlighted the need for innovation and emphasised the important role of tertiary education in developing and establishing the required skills set and evidence base research. A key message from the conference was that integration and connectivity to the global network should be harnessed to hasten South Africa's economic transition. 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 municipalities are seeing the case for investing in resource efficiency and innovative green solutions.

6.1 Metropolitan: City of Cape Town

The City of Cape Town has been formulating a Green Economy Strategy and Action Plan in order to programmatically administer the City's interventions. The draft strategy sets out at least nine high level cross cutting objectives in pursuit of growing the number of jobs in the green economy. Among others, these include:

- Facilitating an increase of domestic and foreign investment into the local production and assembly of green products and the provision of green services.
- Influencing the increase in household and business demand for green products and services and consequently the local supply thereof.
- Promoting efficient use of resources in order to ensure the on-going sustainability of the economy and cost-competiveness of local businesses
- Promoting Cape Town as a green destination to visit, work in, and invest in.

The City has for decades been implementing projects and programmes that positively impact on the green economy. The Action Plan seeks to capture all relevant projects and programmes in one place. This will assist to 1) establish a programmatic approach to filling the gaps, 2) support the upscaling of certain identified initiatives, 3) monitoring and evaluating performance and 4) determination of impact. Finalisation of the strategy and action plan is expected in 2017.



A selection of green-economy related projects underway currently include:

6.1.1 Clean Tech Investment

- Operation of the Atlantis Investment Facilitation Office in support of the GreenTech Hub: Specialised investment advice to potential investors on site location and availability of services for the purposes of building individual firm level investment cases.
- Implementation of the Investment Incentives Policy targeted to Atlantis, including the GreenTech Hub: Provision of certain financial and non-financial incentives to investors into manufacturing facilities that create a certain minimum number of jobs.

6.1.2 Waste

- Rollout and expansion of the home composting initiative: Rollout of composting containers in Cape Town to enable new industries and business through stimulation of the market and to reduce the disposal of methane-forming organic waste in landfills. 6000 Home Composting Containers were successfully rolled out to residents during 2016. A further 5000 Home Composting Containers are planned to be rolled out by 30 June 2017.
- Material recovery at landfill sites: To divert as much recyclable and re-usable material dropped off at the City's Drop-off sites as possible from landfill into either the recycling or re-use economy. The service is currently at full-scale at the "Collections" Drop-Off sites, but is currently in the planning phase to be rolled out initially to two "Disposal" Drop-Off Sites.
- Western Cape Industrial Symbiosis Programme: The City provides a disbursement to GreenCape in support of the WISP programme's initiatives within Cape Town - providing an enabling environment for industries across Cape Town to engage in industrial symbiosis and exchange 'waste'.
- Integrated Waste Exchange (IWEX): An online platform for industries, NGOs etc. to exchange waste effectively that has been rolled out at full scale with periodic enhancements/improvements.
- "Think Twice" kerb-side recycling collection and separation at materials recovery and sorting facilities: This will stimulate inclusive business development (may include co-operative or SMME approaches) in the recyclables collection and sorting sectors and feed the end markets for recyclables. The service is operating "full-scale" in certain pilot areas, and a 10 or 20 year plan needs to be developed in the next IDP cycle to roll out similar types of services in other areas, which may include the development of further City sorting facilities.

6.1.3 Energy

- Promotion of the Solar Water Heater Accreditation Programme: The City continues to encourage the installation of high-pressure residential solar water heaters through endorsing accredited service providers, promoting solar water heater uptake through training, communication and educational campaigns, monitoring the performance of the selected service providers and undertaking quality control.

- Ceiling retrofit programme: The City is in the process of installing ceilings in over 8000 old RDP houses over 3 years (hopefully with further to follow), which will improve indoor air quality and warmth and reduce condensation and mould, while reducing electricity consumption.
- Energy efficiency retrofits of public lighting and traffic lights³: The City of Cape Town has undertaken traffic and street lights retrofits over the past few years (boosted by national government funding and assistance). The traffic light and street light retrofits have resulted in annual energy savings of approximately 37 294 MWh and 25 961 MWh respectively.
- Energy efficiency retrofits of municipal buildings:⁴ The City has completed the retrofitting of approximately 26% of its large buildings, has installed smart electricity meters (AMRs) in more than half of its largest administrative buildings and runs a behaviour change programme to effectively manage electricity consumption. The result has been an annual energy saving of approximately 6 865 MWh.
- Small-scale embedded generation: The City has established suitable tariffs; identified suitable metering systems which can measure power flow in two directions; and implemented automated billing systems, which take into account both the purchase and sale of electricity. These all contribute toward stimulating the green economy by increasing demand for solar panels and other sources of alternative energy.

6.1.4 Transport

- Awarding of a tender for the provision of electric buses in the MyCiTi fleet: A competitive tender was won by BYD which will provide a fleet of electric buses. BYD subsequently announced that it intended to establish a production plant for electric buses and other green technology in Cape Town in 2018.

6.1.5 Water

- Water Conservation and Water Demand Management Programme: This programme has been running since 2007 in order to help secure affordable water supply for the city's residents and economy. The programme focuses on both technical and behavioural aspects of saving water including raising public awareness and the promotion of water use efficiency; the introduction of a 'stepped' water tariff designed to encourage water savings; free of charge plumbing repairs for low-income households; training of and job creation for 'community plumbers'; the promotion of alternative water sources such as borehole water and recycled water for irrigation; and a range of technical interventions to minimise water losses, such as improved asset management, pressure management schemes, pipe replacement programmes, leak detection and repair and improved meter management. Water consumption growth has been reduced to less than 2% per annum and non-revenue water reduced to approximately 20%, resulting in total water savings of approximately 30%. Expensive

³ 2015 figures

⁴ 2015 figures



capital infrastructure projects, including an additional water supply scheme, have been postponed due to these water savings.

- Invasive plant control programme: The City of Cape Town implements a city-wide invasive plant control programme, one of the key aims of which is to improve the availability of water to ensure economic, industrial and agricultural development, which in turn leads to job creation and sustainable growth. The labour intensive control methods result in the creation of approximately 1000 jobs annually are less damaging to the environment.

6.1.6 Resource efficiency

- Updating of the guidebook, "Resource Efficiency Criteria for Development in Cape Town": The City of Cape Town has developed a useful reference guide to policy and legal directives that form part of the City's overall sustainability framework related to the built environment. The document covers site selection, construction materials, energy efficiency, water efficiency, and the natural environment.

In terms of the City's international commitments, the Executive Mayor accepted an appointment as a commissioner on the Global Commission on the Economy and Climate, which is a major international initiative established to examine how countries can achieve economic growth while dealing with the risks posed by climate change.

6.2 Local Municipalities

The provincial Greenest Municipality Competition flags green economy innovation and the winners of innovation awards for the 2015/16 municipal financial year include Stellenbosch, Mossel Bay and Bitou. These winning green economy innovations are outlined below.

6.2.1 Stellenbosch Municipality



Green Filter Project- The Plankenburg River receives grey water, polluted storm water and effluent overflow from Kayamandi and Enkanini Informal Settlement of Stellenbosch. The recently formed Stellenbosch River Collaborative was looking to improve the water quality in the town's rivers, and, through funding raised by Wildlands, is supporting the piloting of Eco-Machine Technology to divert and treat water from the Plankenburg River. This is the first initiative of its kind to take place in South Africa.

The concept of Eco-Machine technology consists of 14 white water tanks with connecting pipes and river plants in it, where the roots of these plants will act as filters to the river water, thus purifying it. As the water flows from one tank to another, the plants will also differ, because some plants can grow in polluted water and others need clean water to grow; an innovative way to use nature to cleanse itself.

Free-2-Grow (Food Security Project)

Stellenbosch Municipality's Food Security Project provides for all communities food security. To date 30 communal gardens have been established and provide food for organizations such as the Feeding Scheme, Night Shelters and Women Safe Houses. This aims to encourage community participation, resilience and create community pride and economic sustainable livelihoods.

6.2.2 Bitou Municipality

Waste Economy: Recycling Builder's Rubble and Waste Clay to Road/Construction Projects



Faced with a landfill airspace shortage, the municipality embarked on a project to reduce the volume of builders' rubble to landfill. Through crushing builders' rubble to mix with clay, the project has managed to develop compressed earth building blocks to be reused in various construction projects. This is a significant contribution to solving the municipality's waste issue, as construction waste utilises a large percentage of the current landfill airspace.

6.2.3 Mossel Bay Municipality

Mossel Bay Municipality recently designed an innovative portable device for circuit breakers to improve energy efficiency. This invention has resulted in more than R1.5 million in savings for the municipality.



7 Project Update Summary Table

This table includes information on projects that were implemented during the 2015/16 financial year, ending 31 March 2016.

Table 6: WCG Green Economy Projects, Mapped against the Green is Smart Strategy Drivers

2015/16 Green Economy Project Summary Table

	2015/16 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
Strategy, Intelligence and Finance	<p>Green Economy Indicators Research and develop a framework of indicators to assist the Western Cape Government monitor progress towards Sustainability and the Green Economy Performed</p>	<ul style="list-style-type: none"> •The Framework is responsive to in international, national, provincial and local green economy policies, strategies and indicator sets. •The Framework provides a comprehensive picture of the green economy, not just tracking government actions. •The Indicator framework is aligned and responsive to National and parallel Provincial data collection. 	<ul style="list-style-type: none"> •Green Economy Report covering the 2014/2015 financial year was released on 10 February 2016 •IISD Partnership to mainstream Sustainable Public Procurement (SPP) project initiated –(Supported by UNEP 10FYP programme funding of USD 175,000) 	<p>Fill data gaps for the Green Economy Indicators.</p> <p>Extension of investment mapping, and linking to the Green Finance Facility with continued engagement with private sector.</p> <p>Further engagement on strategic procurement leverage to stimulate greening of goods and services in the Western Cape.</p>
	<p>Green Finance Desk Mitigate market inefficiencies for small, green businesses in the WC region</p>	<p>The project aims to:</p> <ul style="list-style-type: none"> •Update the financier database and network •Assist in creating in mapping the green investment opportunity in the Western Cape through prioritising GreenCape initiatives •Project manage the Market Connect programme in conjunction with the World Bank and the Bertha Centre which involves running pilots regarding innovative finance and business model diffusion •Attend conferences and workshops regarding green business and investment 	<ul style="list-style-type: none"> •Submitted the 2nd version of a financier database to SANEDI who will host our database on their website •Mapped size (investment and job creation) of main investment opportunities in green economy. •Kicked off green business matchmaking pilot within GreenCape and worked closely with the Bertha Centre in rolling out their pilots concerning a P2P platform and setting up a Fund of Funds. •Attended various conferences and workshops in a participant and as presenters, sharing our intelligence in this space 	<ul style="list-style-type: none"> •To submit an updated database to SANEDI next year •To continue providing thought leadership on the investment and business landscape (both internal to GreenCape and to external parties) •To continue rolling out Market Connect pilots

	2015/16 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Smart living and working</p> <p style="writing-mode: vertical-rl; transform: rotate(180deg);">Priorities: Smart settlements, Smart resource management systems, Major-user resource</p>	<p>Smart Grids in Western Cape Municipalities Promote the large-scale uptake within municipalities of smart grids infrastructure, and embedded generation.</p>	<ul style="list-style-type: none"> •The project aims to identify opportunities for embedded generation and smart grids •The project seeks an improved understanding of SSEG (small-scale embedded generation) in municipalities. •The project seeks to identify areas of work for WCG in the theme of embedded energy generation. 	<ul style="list-style-type: none"> • Intensive work was done with the City of Cape Town and the five game changer municipalities (Drakenstein, Stellenbosch, George, Mossel Bay & Saldanha Bay) to model tariff designs and draft tariffs that are appropriate to the specific municipality's context and that would enable SSEG. • Generic tariff design principles have been drafted and workshopped with the game changer municipalities. The project team also submitted a report to NERSA regarding the status of SSEG in the province. <p>Key highlights include:</p> <ul style="list-style-type: none"> • Model tariffs drafted for municipalities • Tariff and guidelines wireframe completed • Technical standards for smart meters completed. 	<ul style="list-style-type: none"> • Completion and wireframe guideline for all municipalities on rules and regulations for installing embedded generation; implementation to be evaluated. • Tariff structures to be implemented and assessed for 5 largest municipalities • Finalisation and evaluation of smart meter standards • Engage with banks around attractive financing options for rooftop PV installations - covering both residential and commercial market • Engage with industry on training test • Geyser load control rollout plan
	<p>Waste Economy Project</p> <ul style="list-style-type: none"> • Develop a business case and vision for the Waste Economy in the Western Cape. • Phase Two is a gap analysis, strategy formulation and Business Case development which include a project plan and a budget for recommended waste economy projects. 	<p>The project aims to:</p> <ul style="list-style-type: none"> • Turn the WCG Waste Economy Vision (first phase of project) into a reality by developing a business case and phased implementation plan for the transformation of the Waste Economy space in the Western Cape (second phase of project). 	<ul style="list-style-type: none"> • The Status Quo analysis was undertaken in 2015/2016. This project will continue in 2016/17 with a budget of R 600 000.00 (Six Hundred Thousand) from DEDAT. • Significant potential identified for further development. 	<ul style="list-style-type: none"> • This project is in its initial stage and will deliver a Waste Economy vision and direction for implementation in 2017/18.



	2015/16 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
	<p>Genius of SPACE Phase 2 (A 110% Green project) The project focusses on the protection of freshwater resources, namely the Berg River as part of the Berg River Improvement Plan (BRIP), through new design approaches for the management of waste flows that impact on the stormwater network especially in informal settlements.</p>	<ul style="list-style-type: none"> To offer a new manner in which to approach informal settlement upgrading and design, with environmental resource protection and improve key criteria for improved social/community well-being. 	<ul style="list-style-type: none"> Phase 2 inception undertaken in August 2015 was focussed on preparing and engaging the community of Langrug for the implementation of the project. Construction activities preparing for the installation of the living sewer network prototypes for the management of household greywater was initiated in January 2016 including local recruitment of labour. Ground was broken in April 2016 and system fully commissioned end of September 2016. Planning applications initiated for phases 2 and 3 for development of Eco-precinct. <p>Key highlights of the project:</p> <ul style="list-style-type: none"> A Memorandum of Cooperation with Stellenbosch Municipality, with respect to the BRIP projects improved coordination and support. Appointment of Community Liaison Officer with input from the community. Establishment of a Langrug Community Project Committee (community representation for the project) 	<ul style="list-style-type: none"> An intensive communication campaign will be undertaken after construction to ensure ongoing support and commitment. Crucial milestone for the project will be the establishment commencement of microenterprises in partnership with members of the Langrug Community. Opportunities and strategy to further roll out of such systems for the rest of the Langrug Informal Settlement and incorporating methodologies into Dept Human Settlements planning process underway.

	2015/16 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
	<p>Better Living Challenge (BLC) 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. The Challenge is co-ordinated by the Cape Craft and Design Initiative on behalf of WCG.</p>	<ul style="list-style-type: none"> • The project aims to create an enhanced awareness of alternative housing solutions by low-income households • The project encourages design innovations/solutions for the low-income market • The project enables enterprise and skills development for Challenge winners 	<ul style="list-style-type: none"> • Lumkani reaches commercialisation phase ahead of schedule. • R2 Million raised in project sponsorship and support. • City Spec initiates pilot with City of Cape Town. • Use-It brick passes first level of SABS approval. • Design research collated on the informal economy and housing market to support design workshops with WCG. 	
<p>Smart Mobility Priorities: Hydrogen and</p>	<p>No projects for 2015/16</p>			<p>Identify opportunities for government interventions or private sector engagement and partnerships in:</p> <ul style="list-style-type: none"> - public transport - private motorised transport - enabling and supporting non-motorised transport - supporting switching from road to rail freight haulage.



	2015/16 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
	<p>Eco-Invest Phase III Create a space to enable the private sector to invest in ecosystems goods and services projects where co-benefits are achievable</p>	<ul style="list-style-type: none"> Phase I was aimed at investigating priority ecosystems and identifying the potential of obtaining private sector investment into biodiversity and ecosystems goods and services in order to improve biodiversity management and stimulate a sustainable biodiversity economy in the province Phase II aimed to assess the state of readiness of identified priority nature-based economy supply chains in the Western Cape, and seeking ways to advance investment into those sectors. Phase III explored the findings to establish a Provincial Biodiversity Economy Strategy (PBES) to develop key identified biodiversity economy value chains 	<ul style="list-style-type: none"> The Western Cape Eco-Invest project evolved into a Provincial Biodiversity Economy Strategy (PBES) and Programme with the first draft of the Biodiversity Economy Strategy being produced, aligned with the National Biodiversity Economy Strategy (NBES). The detailed exploration of the feasibility and business planning for the Pilot Project Initiatives (Natural products, Spekboom and Invasive Alien Biomass) have elucidated the Provincial Government's role in promoting and facilitating these value chains. Further projects being implemented include the establishment of Communities of Practice for the Honeybush industry and for Alien Clearing, Restoration and Biomass Economies (ACRABE) and the development of Agroforestry BBEE community natural products businesses. 	<ul style="list-style-type: none"> Development of the Biodiversity Economy Programme and associated initiatives within the value chains. Development of guidelines for the sustainable harvesting of wild honeybush. exploring and planning Payment for Ecosystem Services (PES) projects related to carbon sequestration (Integrated Catchment Management, Planting spekboom and SmartAgri development of restorative agriculture & holistic management with livestock farmers)
Smart Agri-production	<p>Biofuels: From Viability to Pilot Projects Deliver a holistic analysis of different biofuel feedstock and production technology</p>	<ul style="list-style-type: none"> Reassessment of business case for triticale conversion to ethanol and animal feed 	<ul style="list-style-type: none"> Assessment of process options for triticale fermentation to ethanol and DDGS in the Western Cape was undertaken and findings presented in September 2015. 	<p>Incentivise innovation related to resource efficiency</p> <p>Interventions to enable more sustainable resource utilisation on farms, including use of technology</p>

	2015/16 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
	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			<p>Explore potential of value generation from on-farm waste through green chemistry and other options</p> <p>Explore new opportunities for commercial and smallholder agriculture</p>
	Conservation Agriculture	The programme encourages judicious use of resources – and promotes the four pillars of conservation agriculture – crop rotation, no tillage, cover crops and maximum cover of the soil to prevent water loss, judicious use of fertilisers, and improved disease and weed control.	Several industry funded projects in process	Expanding the portfolio of projects on Conservation Agriculture.
	FruitLook 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"> •The project encourages efficient water use by farmers 	Conceptual design of support tool – completed <ul style="list-style-type: none"> •Testing phase – completed •Final commissioning –completed, full implementation started on 1 October 2015 	



	2015/16 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
Smart Enterprise Priorities: Integrated framework of measures, Public and private procurement	Western Cape Industrial Symbiosis Programme (WISP) WISP is a sponsored facilitation service that uses Industrial Symbiosis (IS) where unused or residual resources (materials, energy, water, assets, logistics, and expert knowledge) of one company are used by another.	The project aims to: <ul style="list-style-type: none"> To enhance business profitability and sustainability through enabling greater resource efficiency within the Western Cape. 	<ul style="list-style-type: none"> The industrial symbiosis network now consists of over 300 companies and 3,000 underutilised resources are recorded on the SYNERGie™ database. <p>WISP has diverted more than 1,000 tons from landfill over the course of year and can now be considered a significant waste diverter for the City of Cape Town.</p>	<ul style="list-style-type: none"> Increased agro-processing, food and beverage capacity Dedicated capacity for national and other key companies Material flow analysis of key industrial areas for new enterprise development identification Support the coordination of national industrial symbiosis activities and local capacity building Pilot the integration of resource efficiency & cleaner production and industrial symbiosis activities.
	Atlantis GreenTech Special Economic Zone (SEZ) Establish a GreenTech Special Economic Zone in Atlantis	<ul style="list-style-type: none"> aims to leverage a national policy framework, infrastructure support and incentives to companies in order to stimulate investment and job creation in areas of green technology, thereby adding to the Western Cape's position as a leading greentech leader in the region. 	<ul style="list-style-type: none"> The biggest achievements for the project include: <ul style="list-style-type: none"> completing the application documentation and submitting an application for designation as an SEZ. The extension of the Gestamp wind turbine tower plant, as well as the location in Atlantis of one of its key suppliers, namely Resolux, a manufacturer of wind turbine tower internals. <ul style="list-style-type: none"> Launch of the EIA in respect of land in Atlantis for a gas-to-power plant. 	<ul style="list-style-type: none"> Obtaining designation Agreeing institutional arrangements and establishing SEZ entity

	2015/16 Projects and Programmes	Project Outcomes	Project Update	Opportunities for Future Work
	<p>LNG Importation 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"> • This project aims to make significant progress on LNG importation bankability case 	<ul style="list-style-type: none"> • Contractual Risk study was commissioned and completed. • Three locations for gas landing infrastructure and IPPs are being considered very closely, namely the West Coast region (with Saldanha as focal point), Coega and Richard's Bay. • The announcement of the RFI for 300MW gas-to-power undertaken • Commissioning an EIA for land in Atlantis to as potential location for a power plant 	<p>Still to be undertaken: An analysis on the optimal energy diversity mix for the province taking into account cost and intermittency of RE amongst others.</p>
	<p>Sustainable Public Procurement Leverage WCG spend in order to encourage green innovation and resource efficient practices in the private sector</p>	<ul style="list-style-type: none"> • The project seeks to mainstream Sustainable Public Procurement in WCG 	<ul style="list-style-type: none"> • Under the 2Wise2Waste transversal resource efficiency programme, green procurement was expanded to include all Sustainable Public Procurement for the whole of WCG • A partnership and project was co-designed with the IISD to mainstream SPP in WCG under the UNEP 10FYP SPP Programme and was initiated in 2015 with a Co-operation agreement • SPP is now being driven through a transversal procurement forum convened by Provincial Treasury, with strategic inputs from DEA&DP 	<ul style="list-style-type: none"> • Expanded analysis of gas-based industry off-take •



8 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 energy sector only. This excludes emissions from Agriculture, Forestry and Other Land Use, as well as Industrial and Waste emissions.	Energy Consumption and CO ₂ Emissions Database for the Western Cape (DEA&DP, 2014)
2	Agricultural land improved through conservation measures annually	This includes land improved through interventions falling under the Western Cape Department of Agriculture Provincial Landcare Programme.	(Western Cape DOA, 2015) Annual Report 2014/15 provided by Mr Francis Steyn (DOA)
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 Riviersonderend River. This 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 was for urban use and the remainder was allocated for irrigation. 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 2015</i> .	(DWS, 2015) Support to the Continuation of the Water Reconciliation Strategy for the Western Cape Water Supply System: Status Report October 2015. By Umvoto Africa (Pty) Ltd behalf of the Directorate : National Water Resource Planning
4	Carbon emissions for energy sector	This excludes emissions from Agriculture, Forestry and Other Land Use, as well as Industrial and Waste emissions.	Energy Consumption and CO ₂ Emissions Database for the Western Cape (DEA&DP, 2014)
5	Carbon emissions per unit GDP	This 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	Energy Consumption and CO ₂ Emissions Database for the Western Cape (DEA&DP, 2014)
6	Total energy consumption	This information is drawn from the Western Cape Government Energy Consumption and CO ₂ Emissions Database for the Western Cape, published every second year.	Energy Consumption and CO ₂ Emissions Database for the Western Cape (DEA&DP, 2014)
7	Energy consumption by sector	WCG follows the Department of Energy in the use of the Standard Industrial Classification codes.	Energy Consumption and CO ₂ Emissions Database for the Western Cape (DEA&DP, 2014)
8	Energy consumption per unit GDP	The unit of measurement has been changed to conform to national reporting practices	Energy Consumption and CO ₂ Emissions Database for the Western Cape (DEA&DP, 2014)

	Indicator	Additional Notes on Definition and Scope of Indicator	Data Sources
9	Energy consumption per capita	The unit of measurement has been changed to conform to national reporting practices	Energy Consumption and CO2 Emissions Database for the Western Cape (DEA&DP, 2014)
10	Total energy produced from renewable sources by independent power producers	Renewable energy generated but not necessarily feeding into the national grid yet. Small-scale embedded generation not included.	GreenCape database of REIPPPP preferred bidders
11	Municipal solid waste generated annually	Department of Environmental Affairs (DEA) defines Municipal Solid Waste as waste generated from residential and non-industrial commercial sources. This is predominantly household waste (domestic waste) with sometimes the addition of commercial wastes collected by a municipality within a given area. It includes both solid and semi-solid wastes and generally excludes industrial hazardous wastes.	(DEA&DP, 2016). Draft Provincial Integrated Waste Management Plan
12	% Waste diverted from landfill annually	Waste diverted from landfill for reuse, recovery of recycling.	(DEA&DP, 2016). Draft Provincial Integrated Waste Management Plan
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.	Green Drop Report (DWS, 2014)
14	% Households with access to broadband connection	These are households with access to broadband connection via mobile or landline.	StatsSA: General Household Survey. Provided by WC Department of Social Development
15	% Students from science and engineering faculties	A proportion of the total number of registered students at Western Cape higher education institutions	(DHET, 2014) Department of Higher Education and Training Website- Statistics on Post-School Education and Training in South Africa (DST, 2015)
16	Agricultural and agri-processing exports as % of total provincial exports:	The data highlights the value of agricultural exports as a % of total WC exports	Provided by Andrew Partridge of Western Cape DOA
17	Total value of aquaculture sector	This includes marine and freshwater aquaculture but excludes seaweed, carp, ornamentals and koi carp.	DAFF: Aquaculture Yearbook 2015 (unavailable March 2017) (NDA, 2014)
18	Annual tonnage produced by aquaculture	This includes marine and freshwater aquaculture but excludes seaweed, carp, ornamentals and koi carp.	DAFF: Aquaculture Yearbook 2015 (unavailable March 2017)
19	Modal split for	This data is only for the City of Cape Town. Passenger	CCT Comprehensive Integrated



	Indicator	Additional Notes on Definition and Scope of Indicator	Data Sources
	passenger transport	transport is defined as minibus taxi, bus service, Integrated Rapid Transport and commuter rail; it excludes non-motorised transport.	Transport Plan 2013 -2018 (CCT, 2015)
20	% Volume of land freight haulage by rail	This is estimated % volume 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: http://www.slideshare.net/TristanWiggill/review-of-the-national-freight-logistics-strategy
21	% Households with access to energy	These are households with access to electricity mains supply.	StatsSA: General Household Survey Provided by WC Department of Social Development
22	% Households with measure of food insecurity	These are households where access to food is inadequate or severely inadequate.	StatsSA: General Household Survey Provided by WC Department of Social Development
23	% Households with access to sanitation	These are households with access to RDP standard toilet facilities such as flush toilets or a septic tank or a pit toilet with a ventilation pipe.	StatsSA: General Household Survey Provided by WC Department of Social Development
24	% Land under conservation	The Biodiversity Stewardship, Biosphere and World Heritage Site Programmes within CapeNature facilitate conservation at the landscape level.	<i>CapeNature Annual Report 2014/ 2015</i>
25	Annual value of renewable energy projects financed by national and international green/climate funds.	This includes manufacturing and generation, as well as investments for setting up. It includes financing by private investors. The general debt: equity split has been 70: 30.	GreenCape
26	Annual value of capital investment in aquaculture**	Value of capital investment in aquaculture recorded under the Department of Trade and Industry Aquaculture Development Enhancement Programme. The definition of the indicator has changed due to data availability changes. Total South African investment in the industry via the Aquaculture Development and Enhancement Programme is R 38.83 million. The definition of the indicator has changed due to a change in data availability.	DAFF: Aquaculture Yearbook 2015 (unavailable March 2017)

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.**

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

National Strategy for Sustainable Development 2011-2014 (NSSD1)	The NSSD1 identifies “Towards a green economy” as being one of the five key priorities. The transition towards a green economy encompasses green growth contributions to economic growth and employment, while preventing environmental degradation and pollution, loss of biodiversity and unsustainable natural resource use.
National Development Plan (NDP), 2011	Green economy discussion is largely orientated around the promotion of renewable energy, and energy efficiencies. The Plan 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, the NDP states that South Africa will need clear long-term strategies for both adapting and reducing its carbon emissions to a sustainable level. The green economy agenda is identified as a mechanism for promoting deeper industrialisation, energy efficiency and employment.
2020 New Growth Plan (Accord 4: Green Economy Accord), 2011	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.
National Climate Change Response Policy (NCCRP), 2011	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 and move towards greener productive sectors and industries.
Industrial Policy Action Plan (IPAP), 2013	The IPAP identifies green industries as being a priority area and 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.
Draft Policy and Strategy Framework for Green Economy in the Context of Sustainable Development: Towards Implementation of the National Development Plan, 2014	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.



10 Appendix 3: Acronyms

AB VAI	Alien Biomass Value Added Industries
BE	Biodiversity Economy
BLC	Better Living Challenge
BRICS	Brazil, Russia, India, China and South Africa
BRIP	Berg River Improvement Plan
BWTP	Black Water Treatment Plant
CCDI	Cape Craft and Design Initiative
CCT	City of Cape Town
COP	Community of Practice
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
EPIP	Environmental Protection Infrastructure Programme
EPWP	Expanded Public Works Programme
FTE	Full time Equivalent
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
LED	light-emitting diode
LEED	Local Economic and Employment Development
LSM	Living Standards Measure
MIR	Market Intelligence Report
NBES	National Biodiversity Economy Strategy
NBSAP	National Biodiversity Strategy and Action Plan
NCCRP	National Climate Change Response Policy
NCPC	National Cleaner Production Centre
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
PBES	Provincial Biodiversity Economy Strategy
PBSAP	Provincial Biodiversity Strategy and Action Plan
PERO	Provincial Economic Review and Outlook
PSGs	Provincial Strategic Goals
PSP	Provincial Strategic Plan
PV	Photovoltaic
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
RIA Waste Project	Regulatory Impact Assessment Waste Project
SALAGA	South African Local Government Association
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
SMMEs	Small , Medium and Micro 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
WAN	Wide Area Network
WBCSD	World Business Council for Sustainable Development
WCCCRS	Western Cape Climate Change Response Strategy
WCG	Western Cape Government
WCIF	Western Cape Infrastructure Framework
WDC	World Design Capital
WEF	World Economic Forum
WISP	Western Cape Industrial Symbiosis Project
WWF-SA	World Wildlife Fund South Africa
10YFP	10 Year Framework of Programmes



11 Appendix 4: References

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CONTACT:

Chief Directorate Environmental Sustainability
Western Cape Department of Environmental Affairs and Development Planning
Leeusig Building, 01 Dorp Street, Cape Town, 8001
Private Bag X9086, Cape Town, 8000
Telephone: 021 483 0776 **Facsimile:** 021 483 3093
Email: karen.shippey@westerncape.gov.za
Website: www.westerncape.gov.za/eadp



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