



**Western Cape
Government**

Department of Environmental Affairs
and Development Planning



Green Economy Indicator Report 2022

March 2022

About This Report

This is the seventh Western Cape Government (WCG) Green Economy Report. This report aims to:

- I. provide stakeholders with a solid basis for assessing the Western Cape Government's work in the Green Economy; and
- II. Contextualise the WCG policy and strategy response to the Green Economy.

The report:

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

The scope of this report covers work undertaken and progress achieved under the WCG Green is Smart Strategy Framework for the financial years beginning on 1 April 2020 and ending on 31 March 2022. It has been structured so as to give the general context of the Green Economy and then review the five component sections of the table of indicators, namely i) The Natural Resource Base; ii) Resource Productivity; iii) Socio-economy iv) Environmental quality of life; v) Policy & Finance. This was the sixth year of targeted Green Economy (GE) projects in the Western Cape.

Due to the nature of the data that is required for the Western Cape Green Economy Indicators, there is a reporting lag of at least one year for most of the indicators. As a result, most of the sector data is for the 2018/19 calendar year; where this is not the case, the most recent year is provided. The WCG Department of Environmental Affairs and Development Planning (DEA&DP), Directorate: Sustainability would like to acknowledge all colleagues and stakeholders who have contributed to this report.

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List of Abbreviations

AfD	French Development Agency	ICT	Information and Communications Technology
AM	Asset Management	ICLEI	Local Governments for Sustainability
BES	Biodiversity and Ecosystem Services	IDZ	Industrial Development Zone
BIOFIN	Biodiversity Finance Initiative	IPP	Independent Power Producers
CoCT	City of Cape Town	IRP	Integrated Resources Plan
CSIR	Council for Scientific and Industrial Research	ISSD	International institute for Sustainable Development
DEA&DP	Department of Environmental Affairs and Development Planning	LNG	Liquefied Natural Gas
DEDAT	Department of Economic Development and Tourism	LTFs	Long Term Financial Strategic model
DOA	Department of Agriculture	MIR	Market Intelligence Report
DLG	Department of Local Government	MRF	Materials Recovery Facility
DOTP	Department of the Premier	NGO	Non-Governmental Organisation
DTI	Department of Trade and Industry	PBES	Provincial Biodiversity Economy Strategy
DTPW	Department of Transport and Public Works	PBSAP	Provincial Biodiversity Strategy and Action Plan
DWS	Department of Water & Sanitation	PERO	Provincial Economic Review and Outlook
EDP	Economic Development Partnership	PPA	Power Purchase Agreement
EIA	Environmental Impact Assessment	PSG	Provincial Strategic Goal
EIIF	Ecological Infrastructure Investment Framework	PSP	Provincial Strategic Plan
ESG	Environmental, Social, and Governance	PT	Provincial Treasury
EPWP	Expanded Public Works Programme	RE	Renewable Energy
GDP	Gross Domestic Product	REIPPPP	Renewable Energy Independent Power Production Procurement Programme
GE	Green Economy	REP	Restore Eden Programme
GESF	Green Economy Strategy Framework	SALGA	South African Local Government Association
HOD	Head of Department	SCM	Supply Chain Management
		SDG	Sustainable Development Goals
		SEZ	Special Economic Zone
		SIDAFF	Sustainable Infrastructure Development and Finance Facility

SMME	Small, Medium and Micro Enterprise	SWCMA	Strategic Water Catchment Management Area
SoEOR	State of Environment Outlook Report	WCCCRS	Western Cape Climate Change Response Strategy
SPP	Sustainable Public Procurement	WCG	Western Cape Government
SSEG	Small Scale Embedded Generation	WCWSS	Western Cape Water Supply Strategy
STEM	Science, Technology, Engineering and Mathematics	WISP	Waste Industrial Symbiosis Programme
		WWF	Worldwide Fund for Nature

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1. Introduction

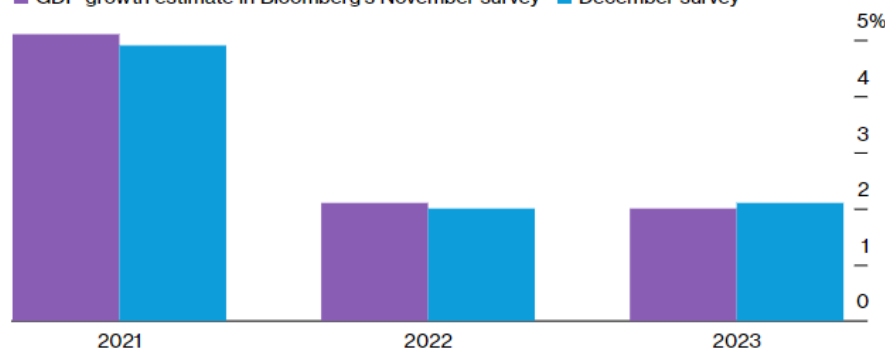
The World Bank reported an estimated GDP growth of 4.6 percent in South Africa in 2021, a post COVID-19 economic rebound stemming from the mining, manufacturing, and services sectors. However economic growth outlook is predicted to remain below 2000-2019 GDP average owing to current COVID-19 outbreaks, power outages social unrest issues. The divide in food security between households, malnutrition and overnutrition in children became more pronounced since the outbreak COVID-19. The United Nations Children's Fund reports that in South Africa, acute malnutrition is a significant underlying cause in child mortalities. As much as the country categorized as middle-upper income country, there is still a form of violence that needs to be addressed. Ending malnutrition in young children (UN SA 2021).

The Covid-19 pandemic has demonstrated that no institution or individual alone can address the economic, environmental, social and technological challenges of our complex, interdependent world. The pandemic has accelerated systemic changes that were apparent before its inception. The fault lines that emerged in 2020 now appear as critical crossroads in 2021. The time to rebuild trust and to make crucial choices is fast approaching as the need to reset priorities and the urgency to reform systems grow stronger around the world.

Downward Revision

South Africa's economic growth is expected to stall on omicron

■ GDP-growth estimate in Bloomberg's November survey ■ December survey



Source: Bloomberg

Figure 1: South Africa's post-Covid Economic Growth outlook : Source Bloomberg 2021.

Aside from slow post-COVID economic recovery in developing economies, climate change has been at the centre of discussions in late 2021 with the UN COP26 Climate Change Summit where parties gathered to accelerate action towards the goals of the Paris Agreement and the UN Framework Convention on Climate Change. Therein, it was noted with concern that provisions of climate finance for developing countries remains low to respond to the worsening climate change impacts while reaffirming that to limit global warming to 1.5 °C rapid reduction of GHG emissions to at least by 45% in 2030.

In agreement with the Global Economic Prospects Report (2022), the South African Climate Finance Landscape Report (2021) as well as the Climate Bonds Initiative (2021) addressing climate change fossil fuel intensive sectors are placed in a position of restructuring from fossil fuel-based energy production to green energy production.

As such, plans towards reskilling the workforce and on social protection and livelihood creation need to be firm, in place and implemented timeously to avoid the materialisation of the current political debate of job losses after decommissioning of ailing coal-fired power plants. Universally, employment rate is a good indicator of a country's economy, as such South Africa reported a record high of 34.9% in Q3 of 2021 with the youth unemployment rate standing at 66.5%. This is concerning as it directly translates to increased poverty and inequality. Inequality is very high with a persistent downward trend Gini Coefficient of 63 for 2022 (World Bank, 2022). The likely current downward trend is exacerbated by COVID-19 induced job losses and downward investment trend.

The South African sustainable development pathway has, for many years been acknowledged equitable transition to a low carbon economy is needed, however the unemployment and inequality trend at present is indicative of slow progress on key issues affecting livelihoods and the environment. It is important to note that there is potential and ample opportunity for South Africa to transition from a coal-based economy to a low carbon economy provided that South Africa receives R596 billion invested annually to achieve its NDC's by 2030 (Cassim *et al.* 2021).

Here there is a clear indication that other than the current COVID-19 pandemic currently faced by the global community, energy consumption and production since the industrial revolution have steadily been wreaking havoc to the environment. The effects thereof are currently impacting the most vulnerable and action required is immediate mitigation action. As for a country ranked among the highest GHG emitters on the planet, steady progress is being made on taking action to limit CO₂ emissions through adoption of legislation, such as the Carbon Tax Act signed into law on the 1st of June 2019. This is a good development for South Africa, but the question is how quick with the State-owned utility move to green energy production and what rate will the automotive/transport sector see the domination of electric vehicles over internal combustion engine powered vehicles.



*Aerial view of Cape Town, South Africa by Richard Cavalleri.
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2. Developments in the Green Economy

2.1. Global

The 2020 Global Sustainable Investments Alliance (GSIA) review reported an increase on the five ESG major ESG markets, highlighted by a 15% growth reaching over USD 32.5 trillion worth of assets under management within a two-year period. GSIA defines sustainable investments as: "Investment strategies that consider environmental and social governance in portfolio selection and management across seven strategies of sustainable investments underpinned by (1) ESG integration, (2) Corporate Engagement & Shareholder Action, (3) Norms – based Screening, (4) Negative/ Exclusionary Screening, (4) Best- in- class/ positive screening, (5) sustainability themed Investing, and (5) Impact Investing and Community investing". Of the above-mentioned investment strategies, ESG integration followed by Negative/Exclusionary Screening and corporate government and stakeholder action were the most commonly used investment strategies enjoying a combined value of USD 25.5 trillion in assets under management.



Figure 2: Global growth of sustainable investment strategies (Source: GSIR 2020)

In merging global EGS trends with efforts towards achieving net-zero emissions and the achievement of Sustainable Development Goal 7 (affordable and clean energy) a report produced by the High-Level dialogue on Energy by the United Nations in 2021 puts forward eight priority recommendations to draw attention to enabling SDGs through inclusive, just energy transitions by recommending the following:

- SDG achievement goals must be integrated as a guiding framework into the planning and transition framework pathways towards clean and sustainable energy,
- Energy transition, social equity and inclusiveness must be the focal implementation point to enable SDG goals achievement,
- The central pillar of just energy transitions must integrate access to affordable, reliable, and sustainable energy,
- Enabling transformational change and climate goals, and
- Ensuring the integration and acceleration of gender equity into energy transition pathways.

These recommendations seek to ensure that the benefits of clean energy transition benefit all global citizens through analysing the needs of the vulnerable and to meet the Paris Agreement (1.50 C) objective. As such, SDG 8 (Decent work and Economic Growth), SDG 9 (Industry Innovation and Infrastructure), SDG 10 (Reducing inequality) and SDG 12 (Responsible consumption and Production) collectively and interchangeably set the scene to creating strategies across different international sectors towards facilitating new economic and job-creation opportunities. To achieve this, governments need to realize that fossil fuels-based job market needs to be transformed as modern, sustainable energy solutions are the key enablers of industrial activity, technological innovation, and infrastructure development.

Developing countries have seen significant renewable energy infrastructure developments to address growing energy demands with RE investments reaching USD19.5 billion in Africa and Middle east. Therein, Africa recorded a renewable power generation increase from 22.93 GW in 2007 to 38.28 GW in 2016. In identifying barriers that stall green energy projects in developing countries, the Climate Strategies reflection paper (2020) produced as an outcome of Climate Strategies Roundtable at the UNFCCC COP25 meeting held in 2019 made the following key findings on just energy transition in developing countries. There findings were that there is lack of consensus in understanding the meaning and implications of the just energy transition which creates barriers into accepting and integrating the concept to policy, High employment rates in developing countries shift focus labour markets management to job creation rather than transformation, thereby reducing focus on green jobs creation, and Informal Sector employers contributing to labour markets in developing countries are often excluded from just energy transition dialogues.



Western Cape - powerlines and wind farm, 2022

In 2021, Eskom proposed a ZAR 400 billion plan to finance its transition from non- renewable sources to solar, gas and potentially hydrogen where the ZAR 200 billion needed to construct solar power stations on 15 of Eskom's power generation facilities within two years (Bloomberg Green 2021). It is evident that the indebted state power utility (with USD 27 billion debt) is feeling the global pressure in moving to renewable energy sources but the political climate, debt, ailing infrastructure, common occurrence of power outages and less reliance on Eskom are inhibiting the state utility to financing its own transition to green energy.

2.2. South Africa

2.2.1. Gender Mainstreaming and integration

While COVID-19 has had and continues to have devastating effects on all aspects of life in communities in South Africa, women and girls have been disproportionately affected by the pandemic, with up to 49% of women in the Western Cape losing their jobs during the first 3 months of lockdown (PERO , 2021).

Women and girls have borne the brunt of the pandemic, as the pandemic has exacerbated pre-existing gender disparities, exposing serious flaws in safety, physical and mental health, education, domestic responsibilities, and employment opportunities (Chitega et al, 2021).

The COVID-19 pandemic revealed how limited and precarious women's labour-market gains have been. Even before the pandemic, progress toward closing the gender gap in labour force participation rates stalled, occupational segregation and gender wage disparities persisted, and most working women were stuck in informal and precarious jobs with few rights and protections (Holmes & Hunt, 2021).

UN Women (2020) identified responses to address the gender inequality during and post COVID-19 pandemic. This included women and women's organisations at the center of the COVID 19 response. A strong focus on the transformation of gender economic discrimination and in the inequities of unpaid care work. Lastly, the formulation of socioeconomic plans and frameworks that is focused on the lives and futures of women and girls putting women and girls at the center of economies to drive better and more sustainable development outcomes.

COVID-19 provided government, and all other stakeholders with opportunities to effect systemic changes that could protect women and promote the commitments and targets set out by Sustainable Development Goal 5 to achieve gender equality. Building economies that support women's livelihoods will take time, but both the public and the private sector need to harness their economic recovery strategies now, to regain the ground that has been lost during the pandemic and lay the foundations for a more equal and just future post Covid-19. As such, the DBSA sets an example by identifying the infrastructure development sector as priority in their gender mainstreaming programme. Therein, the DBSA sets out to procure finance and promote investments in women owned business in the energy, ICT transport and water and sanitation (DBSA.org 2022).

In the South African context, National Government Frameworks are central to addressing gender inequality within the South African public sector context are available and, include [Guidelines on the Implementation of the Framework on gender responsive Planning, Reporting, Monitoring, Evaluation & Auditing](#) (GRPBMEA).

Furthermore, in July 2021, the National Treasury collaborated with the International Monetary Fund's (IMF) Regional Technical Assistance Center for Southern Africa (AFRITAC South) and the Fiscal Affairs Department to apply the IMF's GRB framework and develop a roadmap to advance the gender responsiveness of the budget in the context of the GRPBMEAF. Incorporating a gender perspective in spending reviews and the budget challenge function could ensure that spending rationalizations are better targeted and do not have unintended impacts concerning gender or other vulnerable groups.

The [Gender Equality Strategic Framework for the Public Service](#) is another key framework aimed at achieving women's empowerment and gender equality in the public service workplace and ensuring a better quality of life for all women through improved and accelerated service delivery by the Public Service.

The next Green Economy Report will cover the gender issues in the Green Economy in more depth as 2023/2024 is listed in the Gender Equity Strategic Framework for the Green Economy to undergo a gender gap analysis.

2.2.2. Coal

South Africa's economy is the most coal-dependent and highest carbon intensity in the G20 with 87% of its electricity generated from coal. The coal value chain is a significant contributor to the South African economy, contributing 4.6% in Q1 of 2021 and coal ranking ninth in South Africa's top ten export commodities in 2020. The mining sector employs over 90,000 workers, which is mostly concentrated in regions with high unemployment levels.

Fossil fuel power generation dominates energy generation mix with a staggering figure of 88.9%, followed by renewable energy and nuclear with contributions of 5.5% and 5.6% (Akinbami et al 2021). South Africa is most vulnerable to climate change and currently the harbours the biggest single - point source GHG emitter in the world. In realizing the vulnerability of the country and its citizens to climate change the state president entered into an agreement with the US, UK, France and the EU to accelerate South Africa's just energy transition and decarbonization following the United Nations (UN) COP 26 climate change conference in Glasgow 2021.

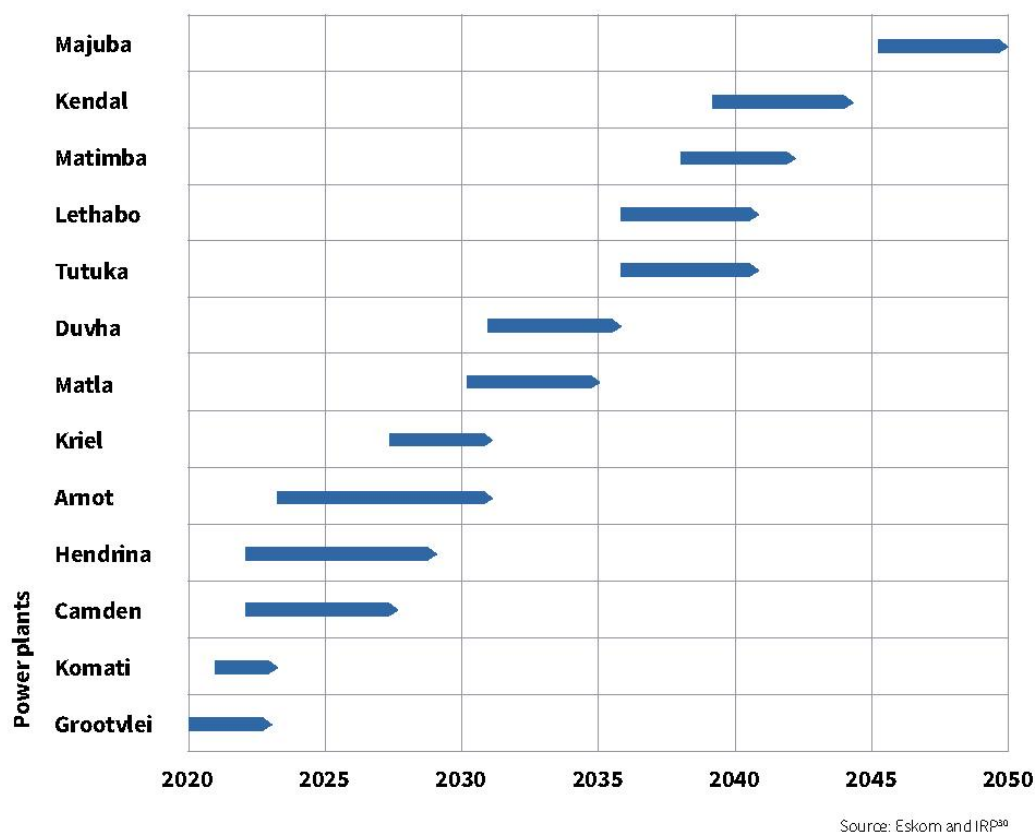


Figure 3: Eskom's 50-year decommissioning outline for coal power plants (Source: Eskom and IRP)

With the National Government's commitment to the goals of the Paris Agreement and its stated aim of achieving "net-zero" carbon emissions by 2050, phasing out of coal is needed to meet Paris Agreement goals of limiting warming below 20C and 1.5c above pre-industrial levels. Climate Transparency International. The continued use of coal will greatly increase greenhouse gas emissions in a sector where there are cost-competitive and commercially viable alternatives.

2.2.3. Waste

The Extended Producer Responsibility (EPR) came into effect in May 2021 to see the appointment of Producer Responsibility Organisations (PRO's) that will drive sector-based waste minimisation programmes; manage financial arrangements for funds to promote the reduction, re-use, recycling and recovery of waste; drive awareness programmes and innovate new measures to reduce the potential impact of products on health and the environment. On addressing the advancement of the circular economy in South Africa, the CSIR and the World Bank recently completed the 1st component of a study that provides a comprehensive overview of circular economy activities in South Africa. The 2nd component of the study will focus on identifying barriers, gaps and opportunities for advancing the circular plastics economy in SA as well as developing recommendations.

The overall potential for GDP growth from this approach is significant. The Waste Research, Development and Innovation (RDI) Roadmap (DST 2014) assessed 13 different waste streams and estimated resources worth an additional R17 billion per year could be unlocked if they were fully beneficiated. Additional benefits could be unlocked by placing minimum recycled content amounts on various products for example or placing tariffs on the import of virgin material, in so doing enhancing local value chains and reducing balance of payments pressures.



City Of Cape Town Recycling Drop-off Facility

2.2.4. Renewables

The falling costs of renewables at the international level has been echoed in South Africa, although delays in procurement mean the latest figures for new renewable projects are somewhat outdated and this energy is even cheaper than previously calculated.

In addition to proposed IRP2019 expansion of renewable energy capacity from a current total of 6000 MW to a total of 26700 MW. The next round of renewable energy procurement under the REIPPP was announced for 1,600MW of onshore wind and 1,000MW of solar PV capacity in March 2021 and the licence threshold for embedded generation projects was increased from 1 MW to 100MW in June 2021. This is expected to attract investment for wind and solar projects.

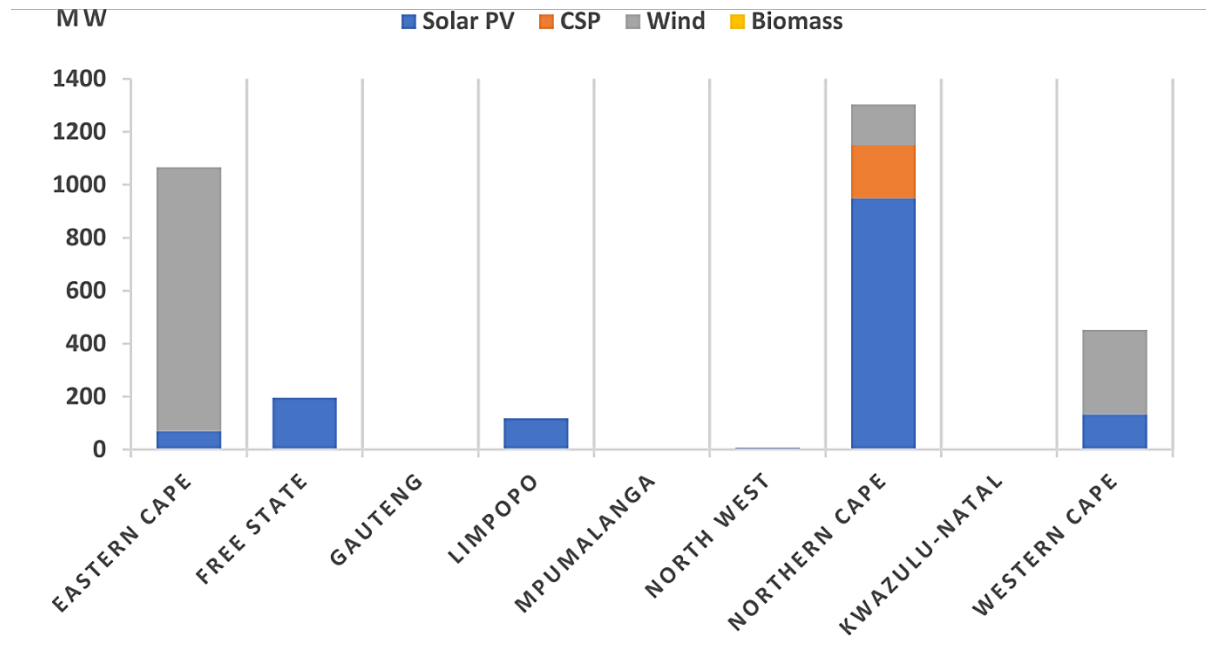


Figure 4: South Africa's electricity generation in TWh by different technologies
(Source: Akinbali et al. 2021)

With load shedding costing South Africa's economy R500 million per stage, per day, and the Western Cape's economy R75 million per stage, per day (BusinessTech 2021). The country's energy crisis, need large-scale private sector participation, in partnership with government. This will be key in addressing the current shortfall in the Western Cape. This announcement will give certainty to investors and will increase access to affordable, renewable energy in South Africa. However, the finalisation of Schedule 2 of the Electricity Regulation Act needs to be priority to ensure permitting and registration do not cause delays in additional delivery in energy supply. This is because of the significant power generation threshold increase from 1MW to 100MW that will eventually lead to energy security and less reliance on the country's power utility.

South Africa's economy is particularly vulnerable to trade-related climate change risks. South Africa is at risk of measures aimed to curb the trade of carbon-intensive goods and imports for carbon-intensive jurisdictions. With South Africa's export market focused on limited destinations, which include China, USA, UK and Japan and concentrated around a limited number of value chains (mineral, automotive, petroleum and agricultural) these two factors make South Africa particularly vulnerable to changes in trade patterns stemming from measures implemented to transition from carbon-intensive activities to low carbon pathways.

The above-mentioned situation is largely due to the country's carbon-intensive energy system, poor energy efficiency performance and the dominance of energy-intensive industries to South Africa's economy. (TIPS, 2021) South Africa's top contributors to GDP, mining, manufacturing and agriculture are also the most energy-intensive industries.

Decisive action to reduce the carbon intensity of the South African economy as well as diversifying the structure of exports to low(er)-carbon products need to be prioritized. Structural constraints in the domestic economy, which include inadequate electricity supply and COVID-19 induced job losses coupled with higher inflation, shifts in monetary policy, changes in commodity prices globally slow economy recovery and long-term growth are predicted for the South African economy (National Treasury 2021).

To accelerate the decarbonisation of South Africa's economy and support economic growth, government from South Africa, France, Germany, the United Kingdom and the United States, along with the European Union announced a long-term Just Energy Transition Partnership in November 2022. The partnership will focus on South Africa's electricity system, to help achieve the emissions goals set out by in the updated Nationally Determined Contribution (EU Commission 2021)

The first phase of financing will mobilise an initial commitment of \$8.5 billion through various mechanisms including grants, concessional loans, investments and risk sharing instruments, which include mobilising the private sector. To move away from coal and to accelerate the transition to a low emission, climate resilient economy, the partnership is expected to prevent 1- 1.5 gigatonnes of emissions over the next 20 years (EU Commission 2021).

With the global economic transition to a low-carbon economic estimated to be trillions of dollars and South African transition risk estimated at R2trn, due to the exports, thermal coal and the related infrastructure, power generation and synthetic fuel production. The Just Energy Transition Partnership is an important step to mitigate the risks associated with the just transition (EU commission, 2021)

In May 2020 South Africa's National Treasury published the draft Technical Paper on "Financing a Sustainable Economy" with the aim of unlocking access to sustainable finance and stimulating the allocation of capital to support a development-focused and climate-resilient economy. Subsequent to the publication, a Draft Green Finance Taxonomy was published in June 2021. The Green Finance taxonomy is an official classification or catalogue that defines a minimum set of assets, projects, and sectors that are eligible to be defined as "green" in line with international best practice and national priorities. The publication is aimed at investors, issuers, and other financial sector participants to track, monitor, and demonstrate the credentials of their green activities in a more confident and efficient way. In the absence of ambitious climate change framework, the development of these publications provides the policy framework development that will facilitate further investment to support the Just Transition.

2.2.5. Carbon

Prior to the UN COP 26 climate summit, the South African cabinet submitted its commitment to the UNFCCC to keep its GHG emissions between the range of 350-420 million tons of CO₂ equivalent by 2030 (Reuters 2021). As for holding the position of the 12th largest emitter of GHG in the world, South Africa made major developments by signing the Carbon Tax Act into law in a bid to mitigate the impacts of climate change.

This implies that GHG emitters listed in schedule 2 of the Act will be taxed at a rate of ZAR144/tCO₂e during the first phase of implementation, which has been extended until 31 December 2025. Therein, thresholds set by National Treasury are in place for combustion activities resulting in GHG emissions, inclusive of fugitive emissions. As such, activities resulting in GHG above or equal to the National threshold subject emitters to carbon tax liability, in addition, road transportation will incur indirect carbon tax liability accounted for through the fuel levy system (SAIT 2020, Deloitte 2021).

Given the generous carbon tax allowances granted to emitters during the first phase of implementation, they will remain low in the next three years. Subject to allowances being granted, the biggest emitters (with Waste Sectors, AFOLU & ESKOM excluded), the carbon tax impact is estimated to cost SASOL over ZAR1 billion, PPCZAR90 million and ArcelorMittal ZAR650 million annually (Engineering News 2022).

As for South Africa's updated emissions reduction pathways, it is important to note that according to the Climate Action Tracker, South Africa's target to reduce emissions by 2030 are insufficient to meet the Paris Agreement 1.5 °C temperature limit. That is to say, the countries targets and policies to address climate change are not stringent enough.



"The Night Lights of Planet Earth" by "woodleywonderworks" is licensed under CC BY 2.0

2.2.6. Trade

The COVID-19 (coronavirus) pandemic has had a major impact on South Africa's economy starting in 2020, with a contraction of 6.4%. With the economy already in a weak position at the start of the pandemic due to low growth and structural constraints, that included electricity shortages. Statistics South Africa (Stats SA) recorded the liquidation of 2,035 companies and close corporations in 2020 and 982 companies and 828 close corporations during the first 11 months of 2021. (PWC, 2022).

Although an upward trajectory with a stronger recovery forecast for both 2021 and 2022 of 6% and 4% respectively for trade in South Africa is projected. This projection is largely based on the well performing South African exports, which include mineral products, precious metals iron and steel products to main export partners China, USA and Germany. Global trade and record high commodity prices have led to South Africa being placed as number 10 on the list of countries that have gained the most from the commodities boom in terms of the country's net exports in proportion to its GDP.

An area of concern however, is that these main export destinations have moved towards low-carbon pathways. This puts South African manufacturing and agricultural exports at risk, due to its carbon intensity. On the contrary to what is happening globally, South Africa for a third consecutive year saw a 0.9% increase, from 2020, in carbon intensity (PwC's Net Zero Economy Index 2021). The carbon intensity has remained almost constant over the last 8 years, at around 79 tCO₂/TJ and is higher than the G20 average¹.

As with all other sectors, South African transport exports are right at the top end of carbon intensity globally, but in this case the bigger threat to the industry is the rapid shift in our two primary exports markets, the EU and the USA, to electric vehicles while South Africa continue to produce petroleum-based vehicles.

In keeping with the National economic developments, the Western Cape's economy felt the impact of the pandemic with an unprecedented contraction of 6.7% in 2020. During this challenging times the Western Cape's exports showed resilience, increasing by 7.4% and totalling R136.8bn of goods exported (Wesgro, 2021). The strong recorded export growth within the Western Cape agricultural sector and the increase in exports within agriculture and agri-processing provides the Western Cape economy with a springboard to support the Western Cape economic recovery post-covid.

2.2.7. Transition to electric vehicles

South Africa's automotive industry can be considered a local gem, with the latest data indicating that the industry contributes 4.9% to the country's gross domestic product (GDP), 13.9% or R175.7 billion of the total value of South Africa's exports and is responsible for 460 000 highly skilled direct jobs in the country. The sector is crucial for achieving South Africa's National Development Plan (NDP) 2030 goals of broadening access to employment and promoting industrialisation. It is therefore imperative that government in collaboration with the automotive sector continuously monitor and keep abreast with global trends to ensure that South Africa keeps and grows its export market.

Global trends indicate that the automotive industry is shifting away from petrol and diesel vehicles to zero-emission vehicles (ZEVs). "A ZEV is an electric car that runs completely CO₂ free in tank-to-wheel mode." The two types of ZEVs are battery electric vehicles (BEVs) and fuel cell electric vehicles (FCEVs). BEVs are powered by a battery and FCEVs are powered by hydrogen.

South Africa's largest export destinations namely the European Union (EU), United Kingdom (UK) and United States of America (USA) have set strict targets of replacing petrol and diesel vehicles with ZEVs by the 2030s. The EU climate plan aims to sell 100% ZEVs by 2035 and by 2030, 50-70% of new vehicle sales in the UK must be ZEVs. In the USA, the Biden Administration has set

out an executive order to make [50% of all new vehicle sales](#) ZEVs by 2030(Whitehouse.gov) 2021).

[South Africa's Automotive Masterplan to 2035](#) (SAAM 2035) has a vision to grow South Africa's vehicle production to 1% of global output by 2035. Transitioning the local automotive sector away from the production of petrol and diesel vehicles to the production of ZEVs will help the country achieve its vision for SAAM 2035. [The Auto Green Paper on the Advancement of New Energy Vehicles in South Africa](#) was released in May 2021 for public comment and has catapulted the conversation towards the development of policy directly aimed at enabling the production of electric vehicles in the country.

In South Africa the passenger ZEVs currently available for sale are BEVs but only [218 were sold](#) in the country in 2021. A crucial challenge facing the uptake of Battery Electric Vehicles(BEVs), in South Africa is price. The purchase price of electric vehicles is relatively higher than that of petrol and diesel vehicles. A major stumbling block is that all the passenger BEVs available for sale in the country are currently imported, which further increases the price due to customs and excise duties. Another contributor to the high price of BEVs is the battery. However, forecasts show that the cost of the battery is reducing and [price parity between BEVs and petrol and diesel vehicles will be reached by 2023](#). Advances in battery technology also mean that vehicle range is becoming less of an issue with the availability of models that can travel up to [575km](#) on a single charge (newmotion.com)

[There are already over 332 publicly accessible charging stations available in South Africa](#). Most of them can be found in South Africa's major metropolitan hubs, and on national roads and motorways. The current vehicle to public charging station ratio in South Africa is 1 public charging station per 5 BEVs , which is higher than the international recommendation of 1 public charging station per 10 BEVs. As the amount of BEVs on South Africa's roads increases, additional charging infrastructure will need to be deployed, particularly in smaller towns and outer lying areas.



Electric Vehicle charging station (Image source: uYilo eMobility Programme) There are advantages when comparing petrol and diesel vehicles to BEVs. The total cost of ownership of a BEV is much less than that of a petrol or diesel vehicle. BEVs run on electricity which means that the cost of refuelling with petrol and diesel is eliminated. The running cost of a BEV per kilometre can be less than R0.50 per kilometre depending on electricity tariffs in your area. A BEV has fewer moving parts than a petrol or diesel vehicle, meaning that the maintenance costs are much lower. At traditional service intervals only inspection of vehicle parts is required for a BEV whereas for petrol and diesel vehicles, parts must be replaced.

The public transport sector also stands to benefit from electrifying their fleets. Busses support 23.6% of South Africa's commuters while mini-bus taxis support 66.5%. The poorest and most vulnerable of the country's society spend up to 40% of their earnings on public transport. A critical factor within the price of public transport are the costs incurred from operation and maintenance of the vehicles used to transport passengers. Since the total cost of ownership of BEV fleets is cheaper than that of diesel or petrol fleets, there is an opportunity for public transport operators to not only save money on the operation and maintenance of their fleets but to also pass some of these savings onto commuters, thus making public transport more affordable.

Government and industry vehicle fleet operators also stand to gain long-term cost savings and benefits by transitioning their fleets to BEVs. Lower maintenance costs mean fewer repairs over the vehicle's lifetime and zero tailpipe emissions contribute to reduction in CO₂ emissions. It is also easier for fleet managers to make accurate budget forecasts as the maintenance and operating costs of a BEV is more predictable than that of a petrol or diesel vehicle.

Additional local manufacturing opportunities are electric two-wheelers and three-wheelers. These vehicles can be used for first and last mile commuting and deliveries of goods and services in rural and urban communities. Rather than importing such vehicles there is an

opportunity to manufacture these vehicles locally due to South Africa's unique terrain and environment.

All the above opportunities will require skills and capacity building interventions to prepare industry for the eventual shift to ZEVs. Those responsible for procuring fleets will need to receive training in basic knowledge and operation of electric vehicles while the related workforce will need to receive training in the high voltage technology of electric vehicles. Curriculums within TVET colleges and universities will also need to be amended to include practical and theoretical training in electric vehicles.

2.2.8. Biodiversity



*Helderberg Nature reserve hike, Somerset West, Cape Town, South Africa by "Quality Master"
Shutterstock.com Image 360664574, used under license from Shutterstock.com*

South Africa is ranked as one of the most vulnerable countries dependent on biodiversity and ecosystem services by Biodiversity and Ecosystem Services (BES) Index analysis (Swiss Re 2020), which highlights country level exposure to biodiversity and ecosystem services decline and identifies the economic sectors most reliant on nature. The continued use of the coal and the subsequent coal value chain its contribution to increased greenhouse gas emissions and subsequent effects on climate change adds additional strain on biodiversity and ecosystem services.

Biodiversity stewardship a key approach to securing land in biodiversity priority areas through entering into agreements with private and communal landowners. Often, these agreements are to establish protected areas. Biodiversity stewardship is a mechanism that facilitates the protection of certain critical ecosystems in the country, greatly contributes United Nations Development Programme Page 2 of 8 to the National Protected Areas Expansion Strategy targets and secures ecological infrastructure that provides a host of ecosystem services like water provision. Biodiversity Stewardship can be used to meet several other environmental goals which includes ecosystem restoration and climate change adaptation.

To support meeting The Biodiversity Finance Initiative (BIOFIN)and South African biodiversity finance outcomes, a finance mechanism is in the process of being developed. It is focused on enhancing, consolidating, and adequately financing provincial biodiversity stewardship programs, so the full benefit of the biodiversity stewardship programs can be felt through contributing to protected area expansion targets, ecosystem restoration and sustainable use of biodiversity across the country.

3. Western Cape Green Economy

The Western Cape Green economy promotion activities are spearheaded by the Department of Environmental Affairs and Development Planning (DEA&DP), the Department of Economic Development and Tourism, Department of Agriculture and GreenCape. The primary areas of focus are on resource efficiency, including energy, water, and waste, but include other elements including Sustainable Public Procurement (SPP), land-use management, biodiversity, and communications.

The work takes the form of support to Provincial and Local Government bodies, support to business, financial support, public awareness, educational programmes, training, and direct funding on selected issues. The following list of projects is not an exhaustive list of Green Economy interventions over the last three-year period but focuses on projects that have delivered significant results in the year prior to this report.

3.1. Green Economy Coordination

The implementation of the Western Cape Government (WCG)'s Green Economy Strategy Framework (GESF) is the responsibility of multiple WCG departments, with overall coordination and oversight by DEDAT. The WCG departments include DEA&DP, Department of Agriculture (DoA), Department of Transport and Public Works (DTPW), Department of the Premier (DoTP), Department of Local Government (DLG), Department of Human Settlements (DoHS), Department of Health (DoH), Provincial Treasury (PT) and the City of Cape Town (CoCT). In addition, much of the work that is needed to grow the green economy needs to be and is undertaken by external stakeholders such as industry players, Non-Profit Organisations (NPOs),

Non-Government Organisations (NGOs), parastatals, the private sector, financial institutions and civil society. Platforms are therefore required to coordinate the implementation of the Green Economy Strategy Framework across WCG departments and with external stakeholders and to communicate barriers, enablers, work underway, lessons learnt, and innovative ideas to enable the growth of the green economy.

The Green Economy Chief Directorate within the Department of Economic Development and Tourism (DEDAT) has a mandate to stimulate the development of green economy and associated industries (i.e., those businesses that provide green technologies, products, and services) towards enabling local manufacturing and job creation opportunities and to facilitate improved resource resilience to enhance the competitiveness and resilience of the Western Cape economy. During the period under review, the DEDAT green economy team had to pause on the Green Economy Coordination work due to COVID-19 related work, budgetary pressures and the intense focus required on the Western Cape Municipal Energy Resilience Initiative.

3.2. The Provincial Biodiversity Economy Strategy (PBES)

The Provincial Biodiversity Economy Strategy (PBES) is one of the strategic delivery areas under the Provincial Biodiversity Strategy and Action Plan (PBSAP) which is a mandate area of the Department of Environmental Affairs and Development Planning (DEA&DP). The PBES itself, is seen as a transversal initiative which will drive a programme of implementation (Biodiversity Economy Programme 2017-2025) of a range of projects/initiatives within the PBES banner including:

- The business case for wild bee populations and conservation strategy;
- Development of the Keurbooms / Karatara catchment - Payment for ecosystems services (PES) project and spinoff projects;
- Bioprospecting and Natural Products Honeybush Community of Practice (HCoP);
- Bitou Agroforestry – Business Training and Agro-processing;
- Sustainable Flower Harvesting Certification/assurance system;
- Development and implementation of the Western Cape Ecological Infrastructure Investment Framework (EIIF); and
- Restore Eden Programme (REP)

3.2.1. The business case for wild bee populations and conservation strategy

The DEA&DP sub-directorate Biodiversity Management has appointed a service provider to assist with the development of a draft Wild Bee Conservation Strategy. This is due to the well-known research showing that bees play a critical role in pollination which is critical for both yield and quality of crop production. Pollination also contributes towards food security, improved biodiversity and job creation. The resultant draft Wild Bee Conservation Strategy recommended options to consider towards the sustainable management of the wild bees. Some of the options included ensuring that wild bees are provided with nesting sites for establishing their colonies and start-up colonies for re-wilding honeybees. However, the Sub-Dir: BM tested the scientific and conservation community regarding the proposed strategy and feedback was received from several local and international bee experts questioning some of the actions proposed by the draft Wild Bee Conservation Strategy. The next phase was therefore put on hold until such time as these concerns are properly addressed.



The second phase of the project was completed with the Wild Bees Conservation Strategy as a final deliverable. The third phase was initiated but the directorate decided to change the angle of addressing the issue of wild bee population decline after the Department received advice from specialists and conservation entities. This included cautionary approaches and research from different experts in this field. The proposed project will endeavour to establish a workgroup with these stakeholders to enable a coherent approach and maybe include a

broader spectrum of pollinators. The project is currently held in abeyance due to lack of funds and capacity.

3.2.2. Bioprospecting and Natural Products Honeybush Community of Practice (HCoP)



Honeybush harvesting, photo by James Puttick

The DEA&DP Biodiversity component continues to drive the Honeybush Community of Practice (HCoP) and the sustainable development of the Honeybush Industry. The HCoP initiated and supported several research projects with its research and academic partners including:

- research to ameliorate the threat of Keurbooms moth and other pathogens that are potentially debilitating the honeybush industry;
- Honeybush augmentation in transformed lands; and
- pollinator range and minimum distance between wild and cultivated honeybush.

Honeybush has also been earmarked for mass cultivation, agro-processing and job creation initiatives. The national Department of Forestry Fisheries and the Environment (DFFE) requested the DEA&DP to lead the completion and implementation of the Biodiversity Management Plan (BMP) for two species (*Cyclopia intermedia* and *C. subternata*); a draft of the Biodiversity Management Plan was publicly gazetted for comment in mid- 2021,

The process is facilitated by the HCoP and comments have been discussed and necessary updates undertaken. The HCoP, with the support and resources of the DFFE will be able to coordinate the implementation and report to the Minister on an annual basis about the implementation and progress of the BMP. Current efforts focus the HCoP's transformation agenda for more inclusive of community participation.

3.2.3. Bitou Agroforestry Projects (BAP) – Business Training and Agro-processing



Harkerville

Bitou Agroforestry Projects (BAP) consists of two projects which were originally conceptualised and initiated by the DEA&DP during 2012 which secured R8.4 million project funding from the national DFFE Environmental Protection and Infrastructure Programme (EPIP). The two projects (Ericaville and Harkerville) have reached the point of transforming from “project” to “business” through intensive training and business development driven and funded by the Department from 2015 to 2019. The DEA&DP is planning to expand the projects to include Agro-processing in the business model and Business and life skills training took place in the previous phase of the projects. Two SMMEs namely “Ericaville Community Trust Farm” and “Harkerville Agri & Forestry Projects” have started trading since 2017. The Ericaville project achieved organic status during 2020 and the Harkerville project gained another 10 hectares of transformed land during 2021 from the local municipality to increase their production footprint.

Moving into 2022 the project aimed to incorporate social economy approaches like “micro-jobbing” and value chain enhancement through permaculture and organic farming to reach a broader representation of these marginalised communities. However, due to the COVID-19 pandemic the project concept needed to be adjusted to take account of the social distancing limitations that will likely be the norm for the rest of this financial year.

The DEA&DP continues to drive business development, nursery skills training and distillation of essential oils for these communities to leverage higher income on the value chain. Through facilitated participation of implementers, mentors, teachers and beneficiaries an application was submitted in 2021 to the Table Mountain Fund (TMF) Prosperity Programme to upscale the BAP into Forest View, Kurland and Covie. The project application was successful and received R750K over three years. The Department facilitated the launch of the project at the end of February 2022.

3.2.4. Sustainable Flower Harvesting Certification/assurance system

The DEA&DP: Biodiversity Management has identified a need to promote sustainable harvesting of wildflowers in the province through engaging existing stakeholders in the industry while also expanding to inspire and draw entrants from previously disadvantaged background to benefit from the industry. The project has produced a Business Plan for implementing an assurance system that is cognizant of the needs of the bio-trade and bioprospecting industries.

The plan proposes implementation based on a model that enables scaling-up as well as scaling out to include other natural resource products in the future.

3.2.5. The Ecological Infrastructure Investment Framework (EIIF)

Ecological infrastructure delivers ecosystem services to people and the economy in the same way as “grey built infrastructure” (cement-based) delivers services basic services to human settlements. Many of the services delivered through “built grey infrastructure”, water for example is dependent on ecological infrastructure. “Ecological infrastructure” can thus be defined as the naturally functioning ecosystems, including mountain catchments, water resources, coastal dunes, and nodes and corridors of natural habitat, which together form a network of interconnected structural elements in the landscape that delivers ecosystem goods and services.

Studies have shown that restoring the ecological infrastructure through invasive alien plant removal is one of, if not the most, a cost-effective and sustainable means of augmenting water supply in the Western Cape Province (TNC 2018; DEA&DP 2019; EIIF 2021).

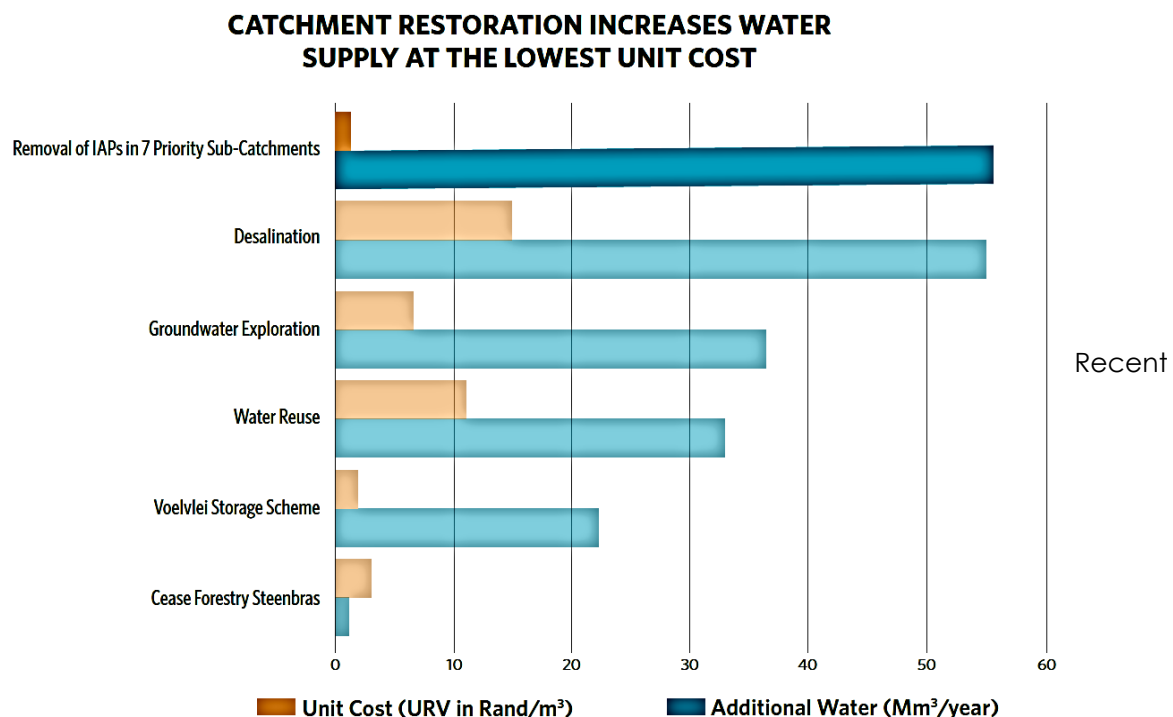


Figure 5: Water supply gain and unit cost (URV) comparison between catchment restoration and other supply options (costs include raw water treatment cost) – TNC 2018

research indicated that the Western Cape Water Supply System (WCWSS) yield has been reduced by ± 38 million m³/annum (the equivalent of Wemmershoek Dam) as a result of alien invasive species growing in the catchment regions. The volume of water lost could increase to 130 million m³/annum ($\pm$ the capacity of the Berg River Dam) by 2045 if the clearing of invasive alien plants is not prioritised eradicated (DEA&DP 2020).

In the Greater Cape Town Region this study's results revealed that spending R372 million on the removal of invasive aliens can generate annual water gains of 50 billion litres (50 Mm³) per year within five years. In addition to security in water supply, removal of invasive alien plants and catchment restoration will create jobs, community SMME empowerment, and reduced fire risk, restore healthy agro-ecosystems and build climate change and ecological resilience.

This programme is supported by the Western Cape Government Department of Agriculture (DoA) which appoints teams of contractors to remove invasive alien plants and do follow-up clearing in areas where clearing has already been done, remove the wood, rehabilitate the areas where invasive alien plants have been removed. This programme is a focussed job creation programme which utilises the Expanded Public Works Programme (EPWP) approach to enable poverty alleviation within the focus areas. The DoA ensures that landowners are involved from the start and that all the necessary environmental authorisations are obtained (e.g., environmental impact assessment, water use licence). Farmers are required contribute financially to the project, creating a culture over time to budget for follow-up work once project funding has stopped. Prior to commencement, agreement is reached on what support is needed so that landowners can sustain the work with limited assistance. Farmers are involved with the monitoring and evaluation of the work completed by contractors. This allows the farmer to advise on the best methodology for their farm and share lessons learnt with DoA project officials. In addition to this, non-monetary contributions are also made by farmers, (i.e., transport, management, welfare and safety of the workers) and amount to approximately 30% of the project cost.

The EIIIF comprises a series of five documents that together outline a coordinated, co-created approach to prioritising investment in important Ecological Infrastructure within the Western Cape Province in order to generate the greatest returns from investment in both a spatial and temporal perspective against key risks to the ecosystem goods and services rendered by the aforementioned Ecological Infrastructure. The documents in question include:

3.2.6. The overarching Ecological Infrastructure Investment Framework report

This report details the process undertaken in co-creating the framework. It outlines the aim and objectives of the framework, the key categories of provincial ecological infrastructure, the risks threatening this infrastructure, and the legislative and legal mechanisms that could be explored/used towards the identified ends. Importantly, the framework is a living document, and is intended to change as objectives are realised, or the priorities of stakeholder and threats to ecological infrastructure change.

3.2.7. The Catchment Prioritisation Report

This report outlines, based on the methodology arrived at in the overarching EIIIF report, the process of prioritising catchments within the province for closer scrutiny and coordination.



[Click here](#) to read The Catchment Prioritisation Report on our website

3.2.8. The Management Unit Control Plan Report

This report further divides the priority catchments identified in the Catchment Prioritisation Report into compartments upon which interventions can be tracked and investment coordinated for three high priority catchments in the province

3.2.9. The Implementation and Monitoring Plan

The Implementation and Monitoring Plan sets out the targets, actions and indicators that are anticipated to arise in the attainment of the investment objectives outlined in the overarching EIIF report. This includes an understanding of roles and responsibilities in this regard.

3.2.10. The Alien Invasive Species Strategy: discussion document

The Alien Invasive Species Strategy discussion document serves as a starting point from which a provincial strategy on alien invasive species can be developed. The strategy sets out how existing and new invasive species should be managed to ensure that their impact on the important ecology of the Western Cape is minimised and eradicated over time.

These documents have been uploaded onto the Department's website, and a dedicated "flagship" page is in the process of being concluded.

3.2.11. Implementation of the EIIF

The following initiatives have been undertaken as implementation of the EIIF:

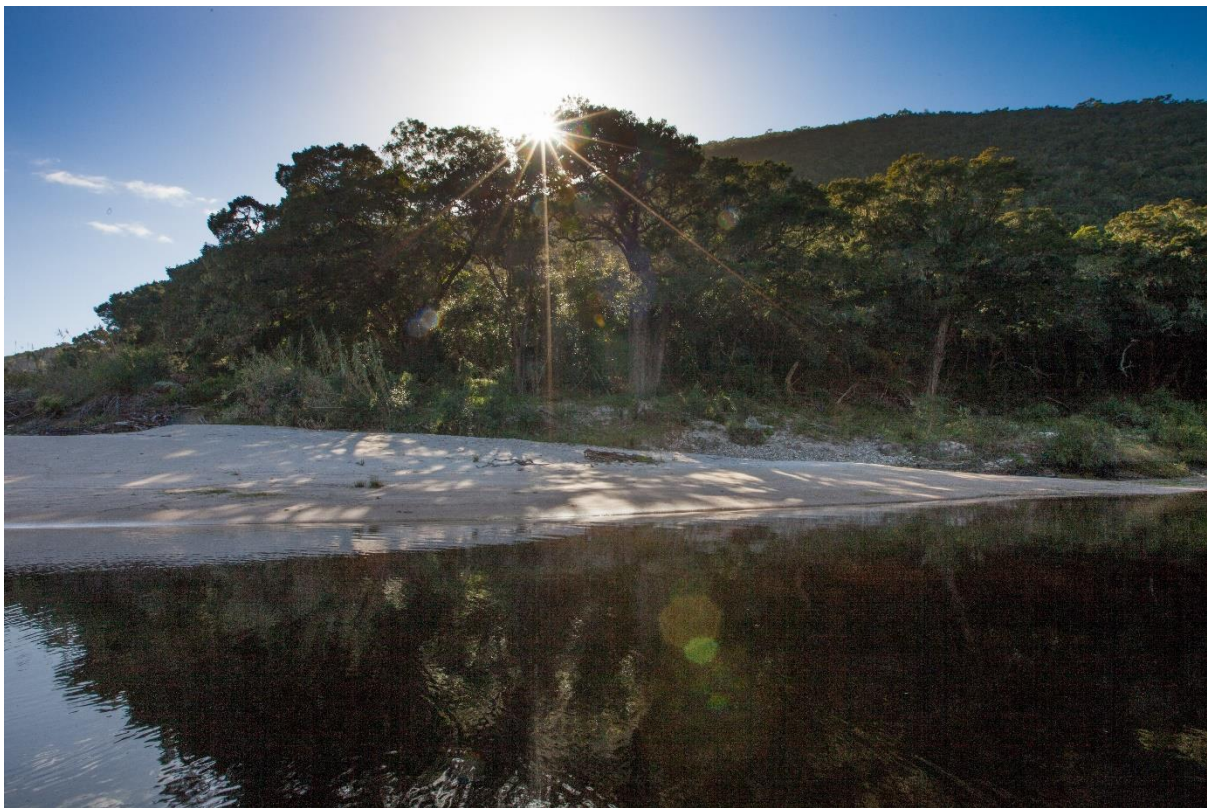
- Clearing of Alien Invasive Plants

Despite numerous proposals being developed for funding towards the clearing of priority alien invasive plants as set out in the EIIIF, no provincial funding has yet been specifically allocated to the EIIIF. Nonetheless, the stakeholders who co-created the EIIIF, such as CapeNature, SANBI, the Western Cape Government's Department of Agriculture, etc. continue to clear alien invasive plants, many of which falling within priority areas as outlined in the EIIIF.

- Exploring alternative avenues of generating investment for ecological infrastructure

Two projects have been undertaken to date that set out to explore alternative funding opportunities for investment in priority ecological infrastructure as set out in the EIIIF. These two projects are the Keurbooms Ecological Infrastructure Investment Working Group and the Biochar, activated carbon and wood vinegar business model.

- The Keurbooms / Karatara catchment - Payment for Ecosystems Services (PES) project



Keurbooms Nature Reserve, photo by Scott Ramsay

The initial phase of the project was completed, and the final business case report in November 2019. The second phase of the project was initiated in early January 2020 and finalised on 15 March 2021. Deliverables included:

- a draft Rapid Review of Payment for Ecosystem Services presentation,
- various group stakeholder engagements,

- a model Payment for Ecosystem Services (PES) / Economic Policy Instrument (EPI) Agreement,
- a Prerequisites Report, and
- a work group (WG) approach that resulted in the establishment of the Keurbooms Ecological Infrastructure Investment Working Group (KEIIWG, with six KEIIWG meetings held to date).

The overall aim of the KEIIWG is to act as a platform for collaboration between ecological infrastructure role-players in the Keurbooms River catchment, including those that supply and those that use key ecosystem goods and services, with the aim of promoting and facilitating enhanced investment in ecological infrastructure restoration and management. The project determined that at this stage reviewing the water tariff by the Municipality was not going to be achieved as part of a PES scheme. In addition to this a report on EPI/PES mechanisms enabling investment into ecological infrastructure at a local level was also developed. All deliverables and the final project report were provided on 15 March 2021. The next phase of the project will focus on coordination of Ecological Infrastructure (EI) investment approaches in the Keurbooms catchment, in line with the Western Cape Ecological Infrastructure Investment Framework (EIIIF 2021) and is scheduled to run until 2023.

- Biochar, Activated Carbon and Wood Vinegar (BAW) business model

The DEA&DP commissioned a business model for tying into, and establishing new, value-added industries associated with harvested alien invasive plant biomass within the Keurbooms and Karatara catchments. This business model considered a pilot project, that would explore the sustainability of creating biochar, activated carbon and wood vinegar from alien invasive plant biomass within the Keurbooms and Karatara catchments. Funding to implement the pilot project is being sought.

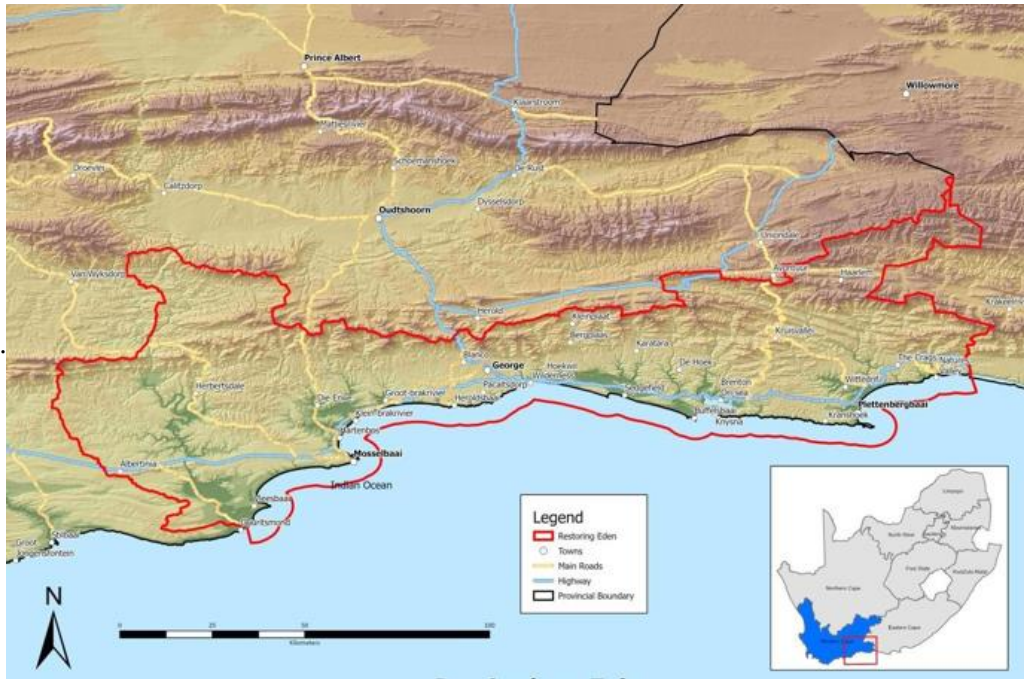
- EIIIF way forward

Initial findings from the implementation of the EIIIF since February 2021 suggests that a programme of projects to be undertaken by the Western Cape Government would greatly aid in the realisation of the investment objectives and the aim of the EIIIF. The merits of developing such a programme are currently being explored and support for the development of such a programme will be sought in the last quarter of the 2021/22 financial year.

The resilience gains associated with the EIIIF have been well defined and have largely been adopted by the key stakeholders. However, the socio-economic impact of investments has been less transparent, and a project term of reference has been developed to provide greater clarity in this regard.

3.2.12. Restore Eden Programme (REP)

The Restore Eden Programme (previously called the Plett-rewild project) has been elevated as a priority for the Premier's office who have been tasked with coordinating and establishing a Task Team for the planning and scoping of a landscape wide concept to transform South Africa's Garden Route into a globally recognized social, economic, and ecological system that ensures a better future for all within the region.



Geographical boundary of the Restoring Eden Programme

The REP is supported by several partner sectors incl. The DFFE, SANParks, Western Cape DEA&DP, Agriculture, CapeNature, WESGRO, District and Local Municipalities, Private sector, civil society and research institutions. The focus is on restoring, natural systems and reconnecting landscapes, restoring human dignity and creating jobs, protecting high value biodiversity and to transition to a green, regenerative and circular economy. The following workstreams have been tasked in this regard:

- **Catchment restoration** (water security and disaster risk reduction)
- **Terrestrial bio-economy** (Agroforestry, natural products, biomass economies, biomimicry learning centre, ecotourism, wildlife and game farming)
- **Marine** (Protection of inshore and shoreline areas & Source-to-sea approach)
- **Estuaries** (Management & conservation, including wetlands and ecotourism)
- **Biodiversity and connectivity** (Landscape scale –developing and maintaining connectivity)
- **Forestry development** (Forestry exit areas for conservation or commercial use)
- **Agricultural Development** (Driving the “reimagining” of future Agricultural)
- **Finance** (securing investment and establishing fundable/investable proposals)

The DEA&DP Biodiversity Management continues to support the process and lead the Terrestrial, Wildlife and Natural products work stream. The REP held site visits and strategic workshops in mid-2021 and the project was presented to the Premiers Coordinating Forum (PCF) in August 2021. The REP Committees are in the process of putting together implement ready Concept notes and proposals for funding. One of the proposals for national DFFE is for the establishment of a certification/assurance system for independent Timber Mills to harvest hard-wood Alien Invasive plant species to produce export quality wood and biomass products. A Portfolio of fundable/investable projects (with inputs from various stakeholders) was developed and submitted to the REP stakeholders.



Clearing invasive aliens

3.3. Economic Water Resilience

During the period under review, elements of the water resilience work were paused due to COVID-19 related work, budgetary pressures and the intense focus required on the Western Cape Municipal Energy Resilience Initiative. The economic water resilience work that supports businesses to help reduce their water consumption through process and technology efficiencies, and to help implement their own water supply augmentation, has been run primarily through the GreenCape-based water sector desk funded by DEDAT. This work also involved strengthening water sector businesses, with a focus on the development of the Western Cape Water Innovation Network (WCWINN) both towards increased local manufacturing, and the use of these technologies as well as towards increasing exports.

The work of the WCWINN has attracted the interest of national organisations, in particular the South African Local Government Association (SALGA) and the Water Research Commission (WRC). Work is underway to use the WCWINN approach to support the development of a national platform, which would provide a greater market for Western Cape water sector businesses.

Recent developments regarding the capacity constraints at various Wastewater Treatment Works (WWTWs) in the City of Cape Town (CoCT) require upgrades in Potsdam, Zandvliet and Macassar WWTWs, which the City is currently addressing. These constraints are likely to negatively affect the economy as there will be no new development approvals from a wastewater treatment perspective until the respective WWTWs are upgraded. This applies to all new residential (private and public), commercial and industrial developments.

3.4. Financial mechanisms and models toward improving economic water resilience project implementation plan

The work conducted in the 2019/20 financial year was phase two of the Financial mechanisms and models toward improving economic water resilience project. This project considered centralised and decentralised water supply options across and in close collaboration with ten municipalities (Beaufort West, Berg River, Cederberg, Kannaland, Matzikama, Oudtshoorn, Prince Albert, Stellenbosch, Swartland and Theewaterskloof). The selection of these municipalities was based on the outcomes of the Economic Water Security Analysis undertaken by DEDAT in partnership with DLG in 2018/19. Project partners included DEDAT, DEA&DP, DLG, City of Cape Town, EDP, Provincial Treasury, the National Business Initiative, National Treasury (Cities Support Programme), SALGA, USAID WASH-FIN and the French Development Bank (Afd).

This second phase of the project consisted of two components:

- Identification of and proposed models for the structuring of hybrid centralised-decentralised water-supply systems and knock-on impacts to municipal revenue and business sustainability
- Consideration of the impacts of varied tariff rates and structures on business.

By assessing the cost effectiveness, climate resilience, municipal financial sustainability and feasibility an assessment of each setting the benefits / disadvantages of different water supply mix options in each municipality under different climate scenarios was developed.

Different types of hybrid centralised-decentralised water supply systems have different impact on economic water resilience in different municipal contexts. The modelling shows that the benefits of hybridisation on businesses in the Western Cape depends to a large extent on the risk of water shortages. The risk is determined by water supply context, which to a large extent determines the vulnerability of the centralised water supply system. Vulnerability is determined by the prevailing climatic conditions as well as the levels of diversification in water sources. For example, municipalities like Beaufort West, Prince Albert, Kannaland and Oudtshoorn, which have both a very low rainfall and limited supply options, are highly vulnerable. In this context, a hybrid option with high levels of decentralisation has a large impact on economic water resilience, although the economy in these municipalities are small. However, decentralisation in these contexts can only take place if it does not affect other users, and if it is financially viable, which in many cases it is not. On the other hand, in the municipalities connected to the WCWSS and the Olifants/Clanwilliam system, which do not face the same climatic constraints and have diversified water supplies, the risk of water shortages and restrictions are low. In these contexts, the costs of running expensive decentralised water supply systems outweigh the risks of shortages.

This approach to future water supply as well as clarity around water pricing is helping businesses make important water-related investment decisions that benefit their own economic security as well as the Western Cape economy. This aids in reducing pressure off the municipal water system, while enabling municipalities to understand and minimise potential revenue impacts of businesses reducing their procurement of municipal water.

3.5. Energy security and Smart-Grids



Installation of rooftop PV (© GreenCape. Images reproduced with permission from GreenCape)

DEDAT started the Western Cape Municipal Energy Resilience (MER) initiative in the 2020/21 financial year. This is a three-year programme running up to March 2023, spearheaded by DEDAT and supported by the combined efforts of the Department of Local Government (DLG), Provincial Treasury (PT) and the Department of Environmental Affairs and Development Planning (DEA&DP). The main objective of the initiative is to improve energy resilience in municipalities across the Western Cape through facilitating, supporting, and positioning for the implementation of renewable energy infrastructure development (public and private) for economic growth, energy affordability, and/or municipal financial sustainability to contribute towards the target of 500MW of new energy generation capacity by 2025. The programme comprises of 3 phases, as depicted in the diagram below:

Phase 1 of the initiative has culminated in a detailed roadmap for 5 pioneering projects in candidate municipalities. In preparation for implementation in phase 2, a Western Cape MER fund was established to undertake foundational work (13 projects across 8 municipalities) towards municipal renewable energy project implementation. This work includes updating and developing new Electricity Master Plans (EMPs), Cost of Supply Studies (CoSS) and energy master plans. Additionally, DEDAT has established an MER panel of service providers to assist in the procurement of transaction advisory and other services that may be required for pioneering and other project implementation.

DEDAT has also continued to drive the uptake of rooftop solar PV in the province through the Green Economy Ecosystem Support contract. Twenty Western Cape municipalities have been provided with support and advice around small scale embedded generation (SSEG), wheeling and / or utility scale energy matters. This has resulted in 24 municipalities allowing private rooftop PV connections to the municipal networks, with 19 of these municipalities allowing households and businesses to be compensated for feeding this electricity back into their networks. Multiple direct engagements with large companies and support provided to

numerous businesses through the assistance of energy sector desk resulted in the installation of approximately 49MW of registered rooftop PV in the Western Cape in the first two quarters of 2021/22 financial year. This represents R490 million worth of investment and around 120 jobs as indicated by the project map below.

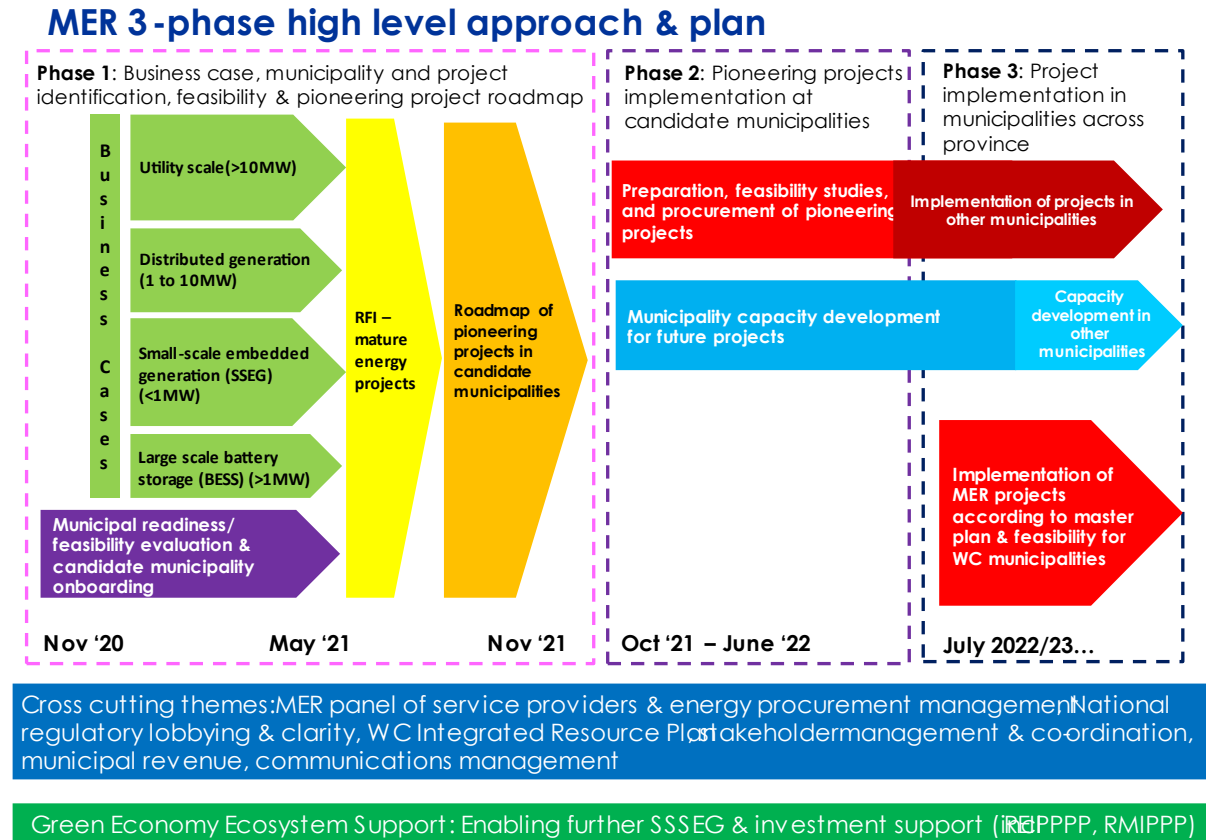


Figure 6: WCG Municipal Energy Resilience (MER) Project Map

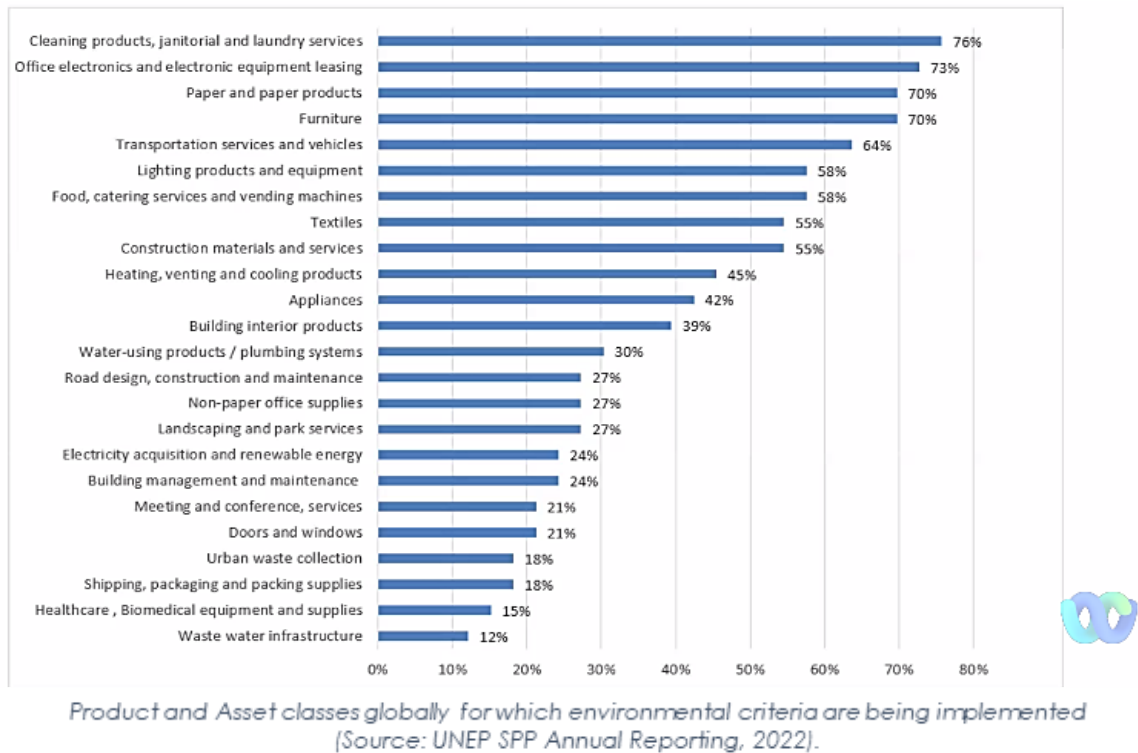
3.6. Smart Procurement Programme (SPP)



3.6.1. Sustainable Public Procurement: Global Trends

Under SDG 12 – Responsible Production and Consumption and more specifically Target 12.7, the promoting of public procurement practices that are sustainable, supported by national policies, are called for globally.

On a global level, by end of 2021 there has been a notable expansion in the product and asset classes for which environmental criteria have been developed, as illustrated by the UNEP Annual SPP Reporting, here showing the most common product categories for which environmental criteria have been developed, on the basis that at least one type of product or service had to be mentioned in national SPP reporting per category – including water-using products, wastewater infrastructure, building management and maintenance, transportation and vehicles, etc. as seen in figure below:



Within the Western Cape Government, there is more than a decade's on-going work on sustainable public procurement and in 2018, the Directorate: Sustainability launched a multi-year programme, called "SmartProcurement", to move these principles forward towards implementation.

In recent decades, there has been a rapid urban change in Western Cape, that placed quite some pressure on the urban infrastructure and municipal services. The SmartProcurement programme is a multi-year program launched by the Western Cape Government in 2018 and aims to capture the core principles of sustainable public procurement and focuses on contracts, contract types, total cost of ownership calculations and how this can be a proxy for sustainable infrastructure development. SmartProcurement responds directly to the challenges around service delivery – including through the total cost of ownership principle – the maintenance and upkeep of municipal infrastructure. Expanding on the early phase of SmartProcurement, these principles are now being expanded to include Asset Management (AM), and the DEA&DP SmartProcurement work is collaborating with Provincial Treasury to collectively respond to SPP and AM requirements from local government service delivery and infrastructure portfolios.

3.6.2. SmartProcurement Programme: Current updates

The SmartProcurement programme period 2018-2021 concluded with the publishing of the Sustainable Public Procurement Training and Implementation Manual in 2021.

This document, *Sustainable Public Procurement Training and Implementation Manual (2021)* has received endorsement from three WCG Departments, namely: Provincial Treasury,

Department of Local Government, and Department of Environmental Affairs & Development Planning which led to the transversal sign-off by these three Departments. The transversally signed-off copy can be accessed [here](#).

The United Nations Environment Programme (UNEP) defines Sustainable Public Procurement (SPP) as “a process whereby organisations meet their needs for goods, services, works and utilities in a way that achieves value for money on a whole life basis in terms of generating benefits not only to the organisation, but also to society and the economy, whilst minimising damage to the environment” (United Nations Environment Programme, 2015).

In practical terms and with regards to infrastructure and asset management, reducing costs across the lifecycle of infrastructure and assets can be used as a proxy for improved project sustainability. An example, of this would be: the lower the amount of water and energy an infrastructure system requires, the lower the costs of operational resource use, thereby resulting in greater value for money and improved natural resource efficiency.

In the first three years of the programme, one of the main goals was to demonstrate Value for Money (VfM) as well as financial implications of sustainable public procurement for Municipalities. This was done by translating sustainability into cost savings through methodologies such as Total cost of Ownership (TcO).

Total Cost of Ownership is defined as,

“an estimate of the total costs of goods, services or construction works over the whole of their life. It's the combination of the purchase price plus all other costs you will incur, less any income you receive.”

<https://www.procurement.govt.nz/assets/procurement-property/documents/guide-total-cost-ownership.pdf>

The Total Cost of Ownership concept explains that the purchase price or development cost is often a smaller portion of the total cost of an infrastructure solution. Both direct costs (e.g., materials, transport, construction and labour costs) and indirect costs (e.g., taxes, insurance, land rent and salaries) need to be considered. This was supported by a previous DEA&DP initiated Sustainable Settlements Feasibility Study, which demonstrated that a sustainable alternative development option has a lower total cost of ownership when calculated against a settlement lifecycle of 40-years. Doing “Business as Usual” would include lower initial cost of the total construction, however high operating costs along the lifecycle would lead to a higher total cost of ownership. The purpose of the SmartProcurement programme is to create awareness on these principles and to encourage ‘change management’ in developing sustainable solutions.

3.6.3. SPP Implementation



Sustainable Public Procurement implementation is established through two DEA&DP adopted plans, namely the Local Government Support Strategy Implementation Plan 2021/2022 and the Western Cape Environmental Implementation Plan 4th Edition 2020-2025.

The implementation targets that have been set in these plans are as follows:

3.6.4. Local Government Support Strategy Implementation Plan 2021/2022

Key outputs: Performance indicators

- Sustainable Public Procurement: support to Municipalities with the implementation of the SmartProcurement toolkit
- Support provided to municipalities to update procurement policies and tender templates to include considerations of SPP in infrastructure procurement

It should be noted that the toolkit referenced above, is the SPP Training and Implementation Manual which can be accessed [here](#).

3.6.5. Western Cape Environmental Implementation Plan 4th Edition (2020-2025)

The Western Cape EIP 4th Edition for the first time included Sustainable Public Procurement as a strategic focus and three indicators have been developed to support the implementation of SPP across the WCG:

Indicator 11	Number of SPP capacity building activities conducted
Indicator 12	Percentage of procurement that can be attributed to at least three of the five the Economic Procurement Policy pillars/focus areas
Indicator 13	Number of municipalities who have SPP embedded in procurement policy and tender templates for infrastructure procurement

The DEA&DP remains responsible for reporting on these indicators with the Annual Compliance Reporting (published on an annual basis during July), however, the responsibility of Indicator 12 and Indicator 13 are shared across WCG Departments: Provincial Treasury and Local Government.

It must be noted that as SPP Indicators have now, for the first time, been introduced as part of the Western Cape EIP, the first reporting year was considered the baseline year. This meant that dialogue has been established, specifically with Provincial Treasury, to establish ownership of data, and to establish the necessary protocol to report on this data, and to collect what data may already be available.

The Environmental Implementation Plan (EIP) is a legal requirement originating from Chapter 3 of the National Environmental Management Act (Act No. 108 of 1994) (NEMA). It is to be prepared by certain national departments, listed in Schedule 1 of NEMA, and every provincial department responsible for environmental affairs.

The purpose of the EIP is to co-ordinate environmental policies plans, programmes and decisions and to secure the protection of the environment across South Africa as a whole. The content requirements of the EIP are outlined in Chapter 3 of NEMA.

The EIP further seeks to align the Environmental Sector priorities and long-term strategies as identified in the National Development Plan Vision (NDP) 2030.

Current status of the SPP Indicator dialogue with Provincial Treasury, is that data collection may become more accessible once PT has rolled out its Supplier Evidence Bank including appointment of IT specialists for the purposes of municipal analysis. This progress is being reported on in the Western Cape EIP Annual Compliance Reporting with the future possibility of Indicator refinement as SPP implementation is further established in the WCG.

3.6.6. Commencing with the roll-out of SmartProcurement Implementation phase: Training and Capacity Building

Taking the DEA&DP SmartProcurement programme forward into the implementation space is based on the following commitments from SmartProcurement 2018-2021:

- Continue to engage with provincial and national treasury as well as the Auditor General in providing explicit directives to municipalities for applying Total Cost of Ownership into strategic planning and procurement processes.
- Continue to utilise existing forums such as the Municipal Supply Chain Management (SCM) forum and the Municipal Managers Forum, among others, to engage on topics of SPP and TcO.

- To further engage on SPP in the SIDAFF programme.
- Provide municipalities with training related to financial mechanisms available to them and contracts that support TcO and SPP.
- Align SPP work with that of economic development programmes to market readiness and supplier development including SMMEs.
- Enhance and enable multi-level governance and opportunities for dialogue across government scales.
- Continue to engage and work with current and additional municipalities as identified through IDP/DoHS SPP analysis.
- Seek policy avenues to embed SPP and TcO to drive policy certainty.
- Engage SALGA on the challenges that municipalities face wrt applying TcO and auditing processes.

3.7. Sustainable Infrastructure Development and Finance Facility (SIDAFF)

Through the Sustainable Infrastructure Development and Finance Facility (SIDAFF), the Western Cape Government Departments: Local Government, Provincial Treasury and Environmental Affairs and Development Planning are providing project preparation support for catalytic municipal infrastructure projects. The first phase of the Programme was funded by the French Development Agency (AFD) with key purpose of developing project pipelines to assist a number of Western Cape municipalities.

Challenges to the implementation of climate resilient infrastructure included poor project pipelines and the ongoing deterioration of natural ecosystems and their ability to support the goods and services used by settlements. The result was a multi-disciplinary programme called the Sustainable Infrastructure Development and Finance Facility (SIDAFF) which addresses pipelines for sustainable and resilient infrastructure with an appropriate funding facility that incorporates TCO and the need for environmental resilience.

The SIDAFF Programme therefore aims to develop a pipeline of sustainable, catalytic, impactful, and integrated infrastructure projects and programmes. This includes taking these projects from pre-feasibility to bankability and for them to be funded on a long-term and competitively priced basis using a blended finance approach (i.e., combining concessional with commercial based finance), which is an approach that accesses the debt capital markets and development finance institutions as laid out in National Treasury's new Municipal Borrowing Policy Framework (2018). A complementary objective is to be able to include green investment in part of the programme to raise green financing.

Once fully developed the SIDAFF Programme process should enable the targeted Intermediate City municipalities to integrate and achieve a more programmatic approach to:

- Spatial Development Planning;

- Budget development;
- Capital Expenditure and Investment Framework development;
- Project development and technical assistance;
- Supply Chain Management;
- Project finance; and
- Environment, Social & Governance performance criteria, green/climate criteria and reporting framework.

As part of the process, it is proposed that projects and programmes will be evaluated from a financial impact point of view by using the Long-Term Financial Strategy Model (LTFS) developed by National Treasury to enable the identification of the most catalytic and impactful projects and programmes that will assist in the formulation of the identified municipalities 10-year Capital Expenditure Framework and guide policy decision-making around borrowing and funding strategies.

The main priority sectors for the SIDAFF Programme include:

- Public buildings
- Social housing;
- Roads and transport;
- Water/Wastewater and sewage treatment;
- Energy generation and energy efficiency;
- Waste management; and
- Cross-cutting infrastructure (including ICT).

3.8. Women in Green Economy

The WCG Department of Environmental Affairs and Development Planning (DEA&DP), Directorate: Sustainability hosted its annual *Women in Green Economy* ("WiGE") event on the 17th of November 2020 as well as on 30th of August 2021, with an attendance of 51 attendees in 2020 and 71 2021 attendees from the public sector, NGO's, NPO's as well as members of the public.

The WiGE event is a platform for woman to showcase their work within the Green Economy. Each year, the WiGE event is based on a relevant theme within the Green Economy sector from which DEA&DP invites women guest speakers to cover various topics within that theme. As such, 2020's theme was the "Women in Green Economy: Green and Circular Solutions Webinar", whereas 2021's theme was "Women in Green Economy: Green Economy and Youth Empowerment".

The 2020 WIGE aimed to highlight the activities of women in the green economy and help participants derive insights into how they can introduce green economy and circular solutions into their business operations. The WIGE event hosted four guest speakers with a variety of expertise and interests in the Green Economy sector. In this regard, the 2020 WIGE hosted the four speakers listed below:



Dr Rethabile Melamu, the General Manager for the Green Economy Unit at The Innovation Hub with more than a decade's experience in the green economy sector, spanning renewable energy and waste management sectors. She has experience in developing public sector strategies and has led the revision of the Gauteng Energy and Green Economy strategies.



Gracia Munganga - at the time of the 2020 WIGE- worked as Manager for the Carbon Trust Africa office (Pretoria, South Africa) as part of the energy access team. Gracia led the Carbon Trust' delivery of market intelligence reports for the African Development Bank for green-mini grids opportunity across Sub-Saharan Africa (SSA).



Anthea Fransman established her business in Recycle 1st in 2009, a green business that could help people do better and act more responsibly towards the environment. With a staff complement of 34 employees, Recycle 1st operate a 1500sqm property in Epping where all recyclables are sorted and sent to the most reputable end users.



Michelle Beale has global experience in helping top-performing organisations leverage opportunities to capture new value and better serve stakeholder needs. She has worked with companies such as Porsche, Distell and Volkswagen to future-proof their businesses by shaping, building and launching innovation growth strategies and initiatives grounded in insight.

2021s attendees met, amongst others, Amava Oluntu who offer entrepreneurial trainings for young adults and creating access to creative business opportunities linked to Fynbos awareness and Mhani Gingi, who supports vulnerable and marginalised groups including people with disabilities, children at early learning centres, survivors of gender-based violence and youth at risk, up to correctional services.

Collectively, the 2021 WIGE event hosted four incredible guest speakers (listed below) with a variety of expertise and interests in the Green Economy sector, and their talks focused on (1) women working on the upskilling of women and youth in nature conservation and food production and (2) women in the renewable energy and e-mobility sector.



Edem Foli (Programme Manager for the national uYilo e-Mobility Programme) - Edem spoke about this multi-stakeholder collaborative programme as initiated by the Technology Innovation Agency with focus on the enabling, facilitating, and mobilising of electric mobility in South Africa.



Charlotte Aubin (Founder of GreenWish Group) - GreenWish was founded in 2010 and Charlotte spoke about the company's dedication to financing, developing, operating and strategic advisory on renewable energy infrastructures and energy transition transactions.



Lillian Masebenza (founder of Mhani Gingi Social Entrepreneurial Network) - "Mhani Gingi" means an Industrious Woman and Lillian spoke about the organisation and its Centre of Social Entrepreneurial Excellence based in Athlone, Cape Town on a shared premise with the commended Saartjie Baartman Centre for Women and Children.



Teresa Boule, (non-profit organization-manager and social impact practitioner) - Teresa currently supports a Non-profit Company trading as Amava Oluntu in Cape Town with a core focus on developing more capacity in the field of youth entrepreneurship.

In sharing a few key take out points from the event and dialogue:

The e-mobility and renewable energy sector is growing and presents many opportunities for job creation and business development. Therein, Edem Foli encouraged women to enable themselves to participate in this industry and diversify their skillsets as early as school level to help build resilience in our current economic climate.

Charlotte Aubin concurred with Edem Foli by highlighting opportunities within renewable energy sector with reference to GreenWish, a company that pioneered renewable energy development and investment in Sub-Saharan Africa. GreenWish developed, financed and commissioned the first solar Independent Power Producer in Senegal, West Africa. This 25 MW Synergy-2 solar PV project gave power access to 160 000 people, saving the government 4.9 USD million, and prevented 25 000 tons of CO₂ emissions annually.

Lillian Masebenza shared how Mhani Gingi empowers women through tailor-made skills training as well as linking their emerging businesses and projects to markets and financial assistance where possible, helping women to improve both their livelihoods and that of their communities.

The DEA&DP Directorate Sustainability and Green Economy Unit recognise the role government plays in enabling innovation and entrepreneurial growth. As such, growth in 'green' job creation in industries such as renewable energy and in the agricultural sector (both production and processing) were identified as potential drivers of inclusive growth.

As we've learnt from this year's WiGE event, there is an opportunity to build resilience in the province through communities, new skills development, and job creation. The event was concluded with the learning that green economy provides good opportunities in the quest of a fully recovered economy - both in terms of direct job creation, but also in terms of improving the energy and water resilience of the economy, consequently supporting growth.

3.9. Support programme for Small and Micro Waste Enterprises in the Western Cape

Small and micro recycling enterprises play a significant role in diverting waste from landfill sites and have the potential to grow even further should a nurturing environment exist for these enterprises to flourish. These enterprises exist despite the challenging receiving environment but also often fail to grow, and in some cases, are forced to cease their operations due to issues of non-compliance, mostly resulting from lack of knowledge, mentorship, and support.



Improving the capacity of these small and micro entrepreneurs who are predominantly involved in the recovery of recyclables can improve business efficiencies and lead to improved recovery rates in municipalities and the potential for job creation.

The majority of these small and micro waste entrepreneurs do not have formal skills training that support entrepreneurial development and often lack the capacity to tender for municipal and private contracts that can secure bigger and better supplies of recyclables.

DEA&DP Waste Management has subsequently embarked on a support programme for these small and micro recycling enterprises in the Western Cape. The programme involves support given over a two-year period. The first year, Phase 1 involves a business diagnostic, onsite business mentorship and support by a business analyst and enterprise development expert. The second year, phase 2 support is facilitated by the DEA&DP where support is leveraged from various government and industry partners.

Recognising the contribution of small and micro waste enterprises to the Green Economy in the Western Cape and their potential for job creation and diverting waste from landfill sites, DEA&DP embarked on a support programme for small and micro waste enterprises in the Western Cape. The programme provided business diagnostic and onsite business mentorship, entrepreneurial skills training as well as tailor made support programme for each enterprise facilitated by the DEA&DP in partnership with DEDAT

The project aims to address the skills gap and access to resources for small and micro waste related enterprises in the Western Cape by assisting municipalities with the implementation waste diversion initiatives that support the integration small and micro waste entrepreneurs inclusive of waste pickers into their diversion systems. Developments and accomplishments in the project activities in the wastepreneuers support programme thus far include the appointment of a service provider and hosting of an inception meeting with service provider, meetings hosted with industry partners to assess willingness to support and level of support for

projects, introductory meetings with respective municipalities and service provider as well reporting on conceptual models for integration.

3.10. Green Economy Ecosystem Support Project

The green economy has two fundamental components: the provision of green economy goods, services, and technologies (supply side) and the greening of the economy (demand side), currently focused on increasing water and energy efficiency of and implementing alternative water and energy supplies in businesses. Both the demand and supply sides have been supported through the work done by the water and energy sector desks running through GreenCape (under DEDAT contract), and by the DEDAT Green Economy team.

Through the support of GreenCape and Wesgro, green economy investments of approximately R11.6 billion were committed to the Western Cape during 2020/21. These investments will lead to the creation of approximately 970 jobs in the Western Cape and were in a commercial rooftop PV solar system, a crypto-driven global peer-to-peer solar panel leasing platform and cloud computing data centres. During 2020/21, a total of 1670 support engagements were undertaken with businesses and municipalities, with an additional 30 businesses being provided with technical advisory support towards encouraging the take up of rooftop PV systems. Due to load shedding, the renewable energy and energy services sector desk recorded higher instances of support to green economy businesses.

In terms of the provision of support to municipalities around solar PV, a renewable energy policy document for use by municipalities was drafted together with a full policy guidance document for small scale embedded generation (SSEG) and electricity ***wheeling**. Ongoing support has been provided to Western Cape municipalities with regards to distributed generation (including SSEG and wheeling) and utility scale renewable energy.

Electricity wheeling is defined as: “transporting energy from a generator to a remote end-user through existing distribution/ transmission system. This does not mean the electrons entering the system at point A will be used at point B, but rather the act of balancing the energy from a particular generator with the consumption by an end user.”

Four Market Intelligence Reports (MIRs) focusing on water, utility scale renewable energy, energy services and electric vehicles/sustainable mobility and sustainable agriculture were produced, published and distributed to the market (the last of these is funded and driven by the WCG Department of Agriculture). These reports offer numerous opportunities for investors (foreign and local) interested in the green economy in the urban water, sustainable agriculture, energy services, and utility-scale renewable energy sectors in South Africa, with a particular focus on the Western Cape.

3.11. Green Economy Communications

Green economy communications during the reporting period focused on profiling work in economic water resilience, and energy resilience, providing information on the green economy-related resources, events, news, and job opportunities. This communication was provided through the [Western Cape 110% Green website](#).



Over the reporting period, the 110% website has been accessed by 23 780 users, providing a good channel of communication. The website has gone through a partial revamp to better reflect the focus of the green economy work being done within the Western Cape Government.

4. Western Cape Green Economy Indicators

Indicator	Unit	2012 value	2013 value	2014 value	2015 value	2016 value	2017 value	2018 value	2019 Value	2020 Value
Percentage change in carbon emissions against 2009 baseline. Data is for energy sector only.	Percentage (%)	-17.80%	Data is reported biennially. No data for 2013.	Data not yet available.	-12.10%	Data not available yet	Data not available yet @liza	7.1%	Data not available yet	Data not available yet
Agricultural land improved through conservation measures annually.	Hectares (ha)	27,359ha	29,076ha	18,036ha	7,342ha	12,918ha	8,383ha	6386ha	5956ha	3453ha
Total water supply versus total water demand.	Volume (m³)	Supply: 596,000,000m³ Demand: 510,201,000m	Supply: 596,000,000m³ Demand: 508,100,000m	Supply: 596,000,000m³ Demand: 547,260,000m	Supply: 565,850,000m³ Demand: 541,340,000m	Supply: 546 000 000 m3 Demand: 430,690,000m	Supply: 546 000 000 m3 Demand: 279,270,000m³	Supply 545 7000 000m3 Demand 274 000 000	Data not available yet	Data not available yet
Carbon emissions for energy sector.	Carbon-equivalent emissions (CO ₂ e)	Emissions for energy sector: 36,345,753.00tCO ₂ e Emissions per unit GDP: 82tCO ₂ e/million units GDP*	Data is reported biennially. No data for 2013.	Data not yet available.	Emissions for energy sector: 38,901,581.00tCO ₂ e Emissions per GDP: 103tCO ₂ e/million units GDP	Data not yet available.	Data not yet available.	Emissions for energy sector (including transport related fuels) 34 087 941.00 tCO ₂ e Emissions per unit GDP	Data not available yet	Data not available yet
Total energy consumption	Gigajoule (GJ)	276,333,250GJ	No data for 2013/2014 financial year.	316,251,814.16GJ	299,401,472GJ	Data not available yet	Data not available yet	263 256 460 GJ	Data not available yet	Data not available yet
Energy consumption by sector.	Gigajoule (GJ)	Industry: 85,383,982.29GJ Transport: 146,296,369.73GJ Agriculture: 6,968,221.23GJ Commerce and Public Services: 10,921,301.41GJ Local Government: 2,111,886.20GJ Residential: 24,652,304.95GJ	No data for 2013/2014 financial year.	Data not yet available.	Industry: 87,530,766GJ Transport: 161,817,293GJ Agriculture: 5,092,440GJ Commerce and Public Services: 14,430,141GJ Local Government: 1,561,059GJ Residential: 28,969,771GJ	Data not available yet	Data not available yet	Industry 71 702 114 GJ Transport 139 209 877 GJ Agriculture 4350 997 GJ Commerce 24 138 095 GJ Local Government 861 728 GJ Residential 22 993 552 GJ	Data not available yet	Data not available yet
Energy consumption per unit GDP.	Gigajoule (GJ)/million units GDP	629GJ/million units GDP*	Data is reported biennially. No data for 2013.	Data not available yet.	792GJ/million units GDP.	Data not available yet	Data not available yet	625.23 GJ / million units GDP	No data available yet	No data available yet
Energy consumption per capita.	Gigajoule (GJ)/capita	46GJ/capita*	Data is reported biennially. No data for 2013.	Data not available yet.	48GJ/capita	Data not available yet	Data not available yet		No data available yet	No data available yet
Total energy produced from renewable sources by independent power producers.	Megawatt (MW)	133.40MW	421.82MW	497.00MW	606.0MW	606.0MW**	606.0MW	6 422 MW	6 422 MW	6 422 MW
Municipal solid waste generated annually.	Tonnes	3,807,765 tonnes	No data	2,922,190 tonnes	4,067,982.20 tonnes	2 491 114 tonnes	2 574 881 tonnes	1,355,035 tonnes	166754 tonnes	1617103 tonnes
Waste diverted from landfill annually.	Percentage	9%	Data is reported biennially. No data for 2013.	38.00%	16.00%	26.70%	26.40%	41.75%	38.19%	41.74%
Green Drop Score	Percentage	84.50%	No data for 2013.	No data for 2014.	No data for 2015.	No data for 2016.	No data for 2017.	No data for 2018	No data 2019	No data 2020

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Indicator	Unit	2012 value	2013 value	2014 value	2015 value	2016 value	2017 value	2018 value	2019 Value	2020 Value
Percentage of households with access to the Internet at home	Percentage	54.3% (StatsSA)	54.4% (StatsSA)	65.89%	67.77%	71.94%	76.24%	74.65% *broadband 17,394,635 (StatsSA number of households)	74.65%	78.27%
Percentage students graduating from science and engineering faculties.	Percentage	40.40%	41.00%	41.20%	41.0%***	39.94%		29.1%	Data not available yet	Data not available yet
Percentage agricultural and agri-processing exports as a portion of total provincial exports.	Percentage	48.95%	55.07%	50.81%	48.22%	52.24%	48.73%	53%	48.4%	56.1%
Total value of aquaculture sector.	Rands	R405 million	R538.56 million	R427 million	R447 million	R545 million	No data for 2017.	R1217 340 207	No data for 2019	No data for 2020
Total annual tonnage produced by the aquaculture sector.	Tonnes	2,520.00 tonnes	3,352.35 tonnes		2 574 tonnes			7085.65 tonnes	No data for 2019	No data for 2019
Modal split for passenger transport.****	Percentage	Private transport: 52% Public transport: 48%	Private transport: 52% Public transport: 48%	Private transport: 52% Public transport: 48%	Private transport: 48% Public transport: 52%	Private transport: 53% Public transport: 47%	Private transport: 53% Public transport: 47%	Private transport: 50 % Public transport:50%	No data available for 2019	No data available for 2020
Percentage of total volume of land freight haulage by rail.	Percentage	N1: 3.2% N2: 0.9% N7: 3.4%	N1: 0% N2: 4.1% N7: 45.2%	No data available.	No data available.	N1: 0.7% N2: 3.9% N7: 48%	N1: 3.9% N2: 0.8% N7: 50.9%	N1: 3.9% N2: 1.2% N7: 48.2%	N1: 2.2 N2: 1.6 N7: 23.2	Data for 2020 currently being updated
Percentage households with access to energy.	Percentage	90.50%	89.30%	87.60%	89.82%	86.55%	86.59%	88.41%	88.41%	93.02%
Percentage households with a measure of food insecurity.	Percentage	21.30%	22.70%	25.50%	13.13%	13.55%	11.55%	11.67%	11.15%	16.94%
Percentage households with access to sanitation	Percentage	95.60%	94.80%	94.60%	93.21%	94.18%	94.03%	94.39%	94.39%	93.36%
Percentage land under conservation	Percentage	6.40%	6.54%	6.81%	7.00%	7.40%	7.53%	7.68%	7.71%	7.85%
Cumulative value of renewable energy projects financed by national and international green/climate funds.*	Rands	R3.22 billion	R8.024 billion	R380 million	R3.74 billion	R6.00 billion	No new investments in REIPPP markets	R62.2 billion *	No new investments in REIPPP markets	No new investments in REIPPP markets
Annual value of capital investments in aquaculture	Rands	R241 million	R36.7 million	R126.1 million	R122 million	R348 million	R510.6 million	R512 7 million	Data not available yet	Data not available yet

* Annual climate finance invested in South Africa for 2017 and 2018. [South African Climate Finance Landscape](#) report published by GreenCape and the UCT GSB Bertha Centre for Social Innovation and Entrepreneurship, in partnership with Climate Policy Initiative (CPI). The sources of finance tracked included public finance (~R22bn tracked), private finance (R35.3bn tracked) and blended finance (R4.9bn tracked).

5. Conclusion



Covid-19's impact in South Africa and globally is indisputable. Covid 19 related impacts coupled with unemployment, the energy crises and civic unrest has added to the structural challenges our country faced during and pre the pandemic.

As in other parts of the world, South Africa's immediate responses to the pandemic have been to focus on containing the virus, addressing the immediate health crisis, and limiting

economic fallout. But a large part of the conversation has also been about the pandemic, which represents an opportunity to shift our economic models onto a greener and more inclusive trajectory.

There is an opportunity for South Africa's green economy development, even within the complex socio-economic and ecological context, to employ mechanisms that shift and enhance development toward more sustainable outcomes. Various spheres of Government have continued to develop policies and plans that bring climate resilience and economic development together. However, the feasibility of implementation or scaling up pilot investments depends on the availability and terms of funding and finance.

A World Bank report 2021 suggests South Africa will emerge from the Covid 19 crises weaker than pre Covid despite its solid response to the pandemic. The report suggests by simultaneously implementing policies that preserve macroeconomic stability, revitalize the jobs market, and improve the investment climate to build a more inclusive economy after the pandemic.

To manage the economic transition post Covid-19, environmental actions need to be incorporated into public spending and regulatory measures. This includes the inclusion of circular economy measures and nature-based solutions alongside decarbonisation policies to mitigate the impact on natural capital assets

Strong and well implemented green policies are critical to driving the economic recovery. Lack thereof will bring a rapid return to the CO₂ emissions levels seen before the crisis and continuing increases thereafter.

These policies are key enablers to promote higher economic activity and employment creation with potential significant reduction on CO₂ emissions. To achieve South Africa's greenhouse gas emissions target it will be necessary to avoid the lock-in to higher carbon emissions associated with financing of GHG emitting infrastructure projects such as building new coal-fired power stations. The transition to a low-carbon economy inevitably involves more activity in the low carbon supply chain and less activity in coal mining.

South Africa needs more than the implementation of 'just transition' plans and policies to support livelihoods dependent on industry that doesn't have a sustainable nor a long-term future. That is to say mitigation at presents and in the near future needs to be geared towards simultaneous protection of our natural capital assets, a thriving economy as well as addressing societal needs.



Masiphumelele Wetlands, Southern Peninsula, Cape Town

6. Appendix 1: Additional Notes on Green Economy Indicators Definition and Scope

Indicator category	Indicator	Additional Notes on Definition and Scope	Data Source and Contact
Natural Resource Base	Percentage change in carbon emissions against the 2009 baseline.	Data is for energy sector and limited waste emissions only (i.e. it excludes AFOLU emissions). In 2009, emissions in the Western Cape totalled 44,261,200 tCO ₂ e. Percentage change is calculated as: absolute change in emissions /2009 emissions. Negative value indicates a decrease in carbon emissions relative to the 2009 baseline.	Lize Jennings-Boom Department of Environmental Affairs and Development Planning: Climate Change Directorate.
	Agricultural land improved through conservation measures annually.	This statistic refers to the number of hectares of agricultural land that is protected/rehabilitated to improve agricultural production.	Francis Steyn Western Cape Department of Agriculture
	Total water supply versus total water demand.	Current supply yield is the modeled yield of the system based on water infrastructure (dams, boreholes etc) and long-term average rainfall.	
Resource Productivity	Carbon emissions for energy sector.	This excludes emissions from Agriculture, Forestry and Other Land Use, as well as Industrial and Waste emissions.	Lize Jennings-Boom Department of Environmental Affairs and Development Planning: Climate Change Directorate.
	Total energy consumption	This information is drawn from the Western Cape Government Energy Consumption and CO ₂ Emissions Database for the Western Cape.	Lize Jennings-Boom Department of Environmental Affairs and Development Planning: Climate Change Directorate.
	Energy consumption by sector.	WCG follows the Department of Energy in the use of the Standard Industrial Classification codes.	Lize Jennings-Boom Department of Environmental Affairs and Development Planning: Climate Change Directorate.
	Energy consumption per unit GDP.	The unit of measurement conforms to national reporting practices.	Lize Jennings-Boom Department of Environmental Affairs and Development Planning: Climate Change Directorate.
	Energy consumption per capita.	The unit of measurement has been changed to conform to national reporting practices.	Lize Jennings-Boom Department of Environmental Affairs and Development Planning: Climate Change Directorate.
	Total energy produced from renewable sources by independent power producers.	This value represents the total, cumulative amount of renewable energy that has been procured in the Western Cape through the REIPPPP (as of March 2018).	IPPPP Report: March 2018
	Municipal solid waste generated annually.	This value represents the total amount of solid waste generated annually by the six district/metropolitan municipalities in the Western Cape in 2017	Chantal Dreyden Department of Environmental Affairs and Development Planning: Waste Management
	Waste diverted from landfill annually	This represents the total percentage of waste diverted from landfills in the Western Cape in 2017	Chantal Dreyden Department of Environmental Affairs and Development Planning: Waste Management

GREEN ECONOMY INDICATOR REPORT 2022

Indicator category	Indicator	Additional Notes on Definition and Scope	Data Source and Contact
	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 sewerage.	Department of Water and Sanitation
Socio-economic	Percentage households with access to broadband connection	Statistics were calculated using the StatsSA 2018 General Household Survey data for the Western Cape. Statistic refers to the percentage of households that have access to either: i) fixed broadband; or ii) mobile broadband.	Gavin Miller Western Cape Department of Social Development
	Percentage students from science and engineering faculties.	% of students graduating in the Science, Engineering and Technology major field of study as a % of overall graduates.	Martin Oosthuizen Cape Higher Education Consortium
	Agricultural and agri-processing exports as a percentage of total provincial exports.	The 2012, 2013, 2014, 2015, 2016 and 2017 figures have been updated from previous reports. Agriculture and agri-processing exports refers to the percentage exports of agriculture, forestry, fishing, food, beverages and tobacco as a percentage of the total provincial exports.	Tshepo Morokong Department of Agriculture
	Total value of aquaculture sector.	Data not available.	
	Total annual tonnage produced by the aquaculture sector.	Data not available.	
Environmental Quality of Life	Modal split for passenger transport.	This statistic is only for the City of Cape Town. For a breakdown of the modal split please see page 26 of the Comprehensive Integrated Transport Plan, 2018-2023 https://tdacontenthubfunctions.azurewebsites.net/Document/1794	Sivuyile Jokazi City of Cape Town: Transport Planning
	Percentage of total volume of land freight haulage by rail.	The Western Cape Department of Transport and Public Works divides freight haulage into three main transport corridors corresponding to the national roads, the N1, N2 and N7.	Corrine Gallant Western Cape Department of Transport and Public Works.
	Percentage households with access to energy.	Statistics were calculated using the StatsSA 2018 General Household Survey data for the Western Cape. Statistic refers to the percentage of households with access to a mains electricity supply.	Gavin Miller Western Cape Department of Social Development
	Percentage households with a measure of food insecurity.	Statistics were calculated using the StatsSA 2018 General Household Survey data for the Western Cape. Statistic refers to the number of households who are "sometimes", "often" and "always" food insecure.	Gavin Miller Western Cape Department of Social Development
	Percentage households with access to sanitation	Statistics were calculated using the StatsSA 2018 General Household Survey data for the Western Cape. Statistic refers to the percentage of households with access to: i) a flush toilet connected to a public sewerage system; ii) flush toilet connected to a septic tank; and iii) a pit latrine/toilet with a ventilation pipe.	Gavin Miller Western Cape Department of Social Development
Policy and Finance	Percentage land under conservation	This statistic refers to the conservation estate of CapeNature, which is the area of land in the Western Cape that is managed by CapeNature.	Gail Cleaver-Christie CapeNature
	Cumulative value of renewable energy projects financed by national and international green/climate funds.		South African Climate Finance Landscape 2020 report. 2021
	Annual value of capital investment in aquaculture.	Updated data	

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