

# WATER MARKET INTELLIGENCE REPORT

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## GreenCape

GreenCape is a non-profit organisation that works at the interface of business, government, and academia to identify and remove barriers to economically viable green economy infrastructure solutions. Working in developing countries, GreenCape catalyses the replication and large-scale uptake of these solutions to enable each country and its citizens to prosper.

## Acknowledgements

This market intelligence report was produced in partnership with the Western Cape Government Department of Economic Development and Tourism. We thank Ashton Busani Mpofu and Rudi Botha for the time and effort that they have put into compiling this market intelligence report. We also thank Raldo Kruger, Jane Reddick, Claire Pengelly, Cilnette Pienaar, Lauren Basson, and Johan Lubbe from the Development Bank of Southern Africa for their feedback on draft versions of the report.

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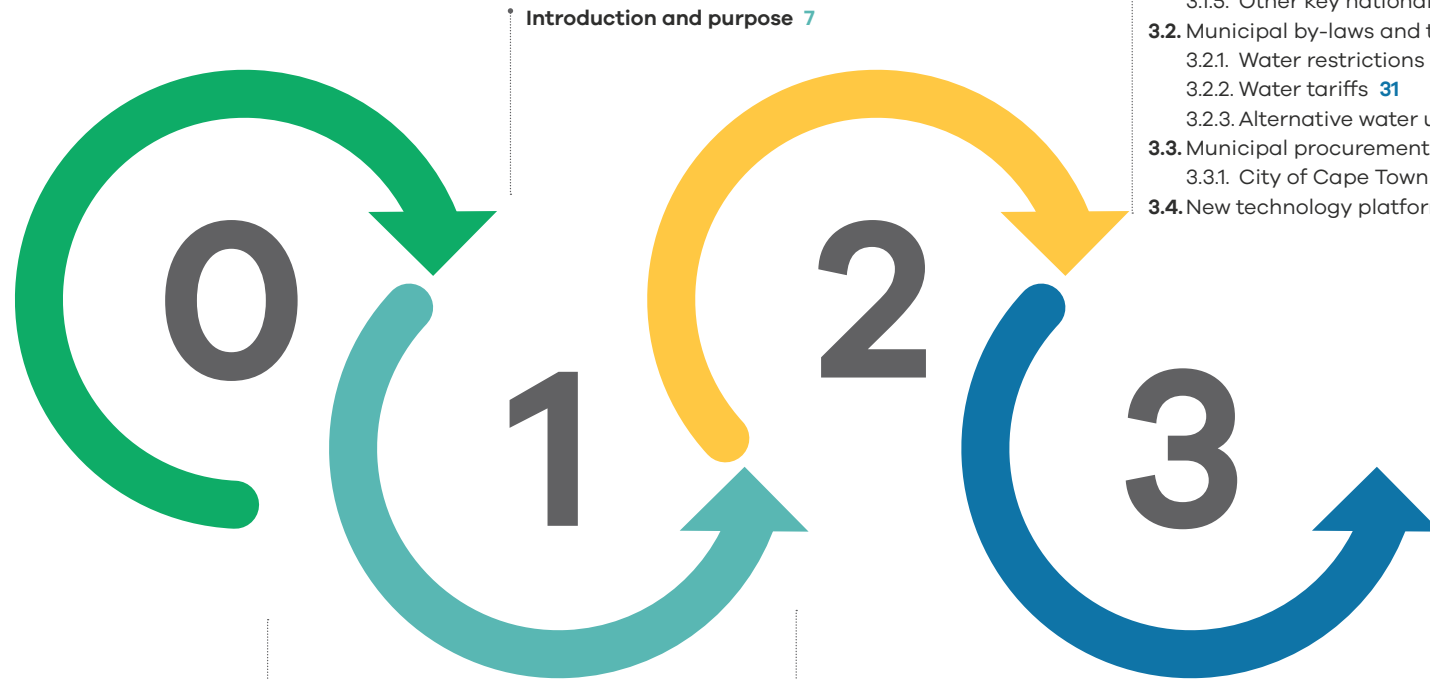
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# LIST OF ABBREVIATIONS AND ACRONYMS

<b>AADD</b>	Annual Average Daily Demand	<b>GA</b>	General Authorisation
<b>AFD</b>	French Development Agency	<b>GDP</b>	Gross Domestic Product
<b>B-BBEE</b>	Broad-based Black Economic Empowerment	<b>GN</b>	Government Notice
<b>BEP</b>	Bucket Eradication Programme	<b>GTAC</b>	Government Technical Advisory Centre
<b>BOT</b>	Build-Operate-Transfer	<b>GVA</b>	Gross Value Add
<b>C&amp;I</b>	Commercial and Industrial	<b>ILI</b>	Infrastructure Leakage Index
<b>CCCI</b>	Cape Chamber of Commerce and Industry	<b>ISUPG</b>	Informal Settlements Upgrading Partnership Grant
<b>CCT</b>	City of Cape Town	<b>MFMA</b>	Municipal Finance Management Act No. 56 of 2003
<b>CECs</b>	Contaminants of emerging concern	<b>MIG</b>	Municipal Infrastructure Grant
<b>CoGTA</b>	Cooperative Governance and Traditional Affairs	<b>MIR</b>	Market Intelligence Report
<b>COVID-19</b>	Corona virus disease	<b>MLD</b>	Megalitres (million litres) per day
<b>CSAG</b>	Climate System Analysis Group	<b>NBI</b>	National Business Initiative
<b>CSD</b>	Central Supplier Database	<b>NBR</b>	National Building Regulations
<b>DBSA</b>	Development Bank of Southern Africa	<b>NDP</b>	National Development Plan
<b>DEADP</b>	Department of Environmental Affairs and Development Planning (Western Cape Government)	<b>NECT</b>	National Education Collaboration Trust
<b>DEDAT</b>	Department of Economic Development and Tourism (Western Cape Government)	<b>NPC</b>	National Planning Commission
<b>DFFE</b>	Department of Forestry, Fisheries and the Environment	<b>NSSS</b>	Non-sewered sanitation systems
<b>DFI</b>	Direct foreign investment	<b>NRW</b>	Non-revenue water
<b>DHSWS</b>	Department of Human Settlements, Water and Sanitation	<b>NRWP</b>	Non-Revenue Water Programme
<b>DLG</b>	Department of Local Government (Western Cape Government)	<b>NT</b>	National Treasury
<b>DWA</b>	Department of Water Affairs (now DHSWS)	<b>NWA</b>	National Water Act
<b>DWAF</b>	Department of Water Affairs and Forestry (now DHSWS)	<b>NW&amp;SMP</b>	National Water and Sanitation Master Plan
<b>DWS</b>	Department of Water and Sanitation (now DHSWS)	<b>PICC</b>	Presidential Infrastructure Coordinating Commission
<b>EIA</b>	Environmental Impact Assessment	<b>PPP</b>	Public Private Partnership
<b>ELU</b>	Existing lawful use	<b>QSE</b>	Qualifying Small Business Enterprise
<b>EME</b>	Exempted micro enterprise	<b>RBIG</b>	Regional Bulk Infrastructure Grant
<b>ERRP</b>	Economic Reconstruction and Recovery Plan	<b>RFQ</b>	Request for Quotation
		<b>SAFE</b>	Sanitation Appropriate for Education Initiative
		<b>SALGA</b>	South African Local Government Association

<b>SANS</b>	South African National Standard
<b>SDG</b>	Sustainable Development Goal
<b>SIDAFF</b>	Sustainable Infrastructure Development and Financial Facility Programme
<b>SIV</b>	System input volume
<b>SLA</b>	Service level agreement
<b>TIF</b>	Technology and Innovation Forum
<b>TMG</b>	Table Mountain Group
<b>UISG</b>	Upgrading of Informal Settlements Grant
<b>VAT</b>	Value-added tax
<b>WASH</b>	Water, sanitation, and hygiene
<b>WASH-FIN</b>	USAID Water, Sanitation and Hygiene Finance Project
<b>WC</b>	Western Cape
<b>WCG</b>	Western Cape Government
<b>WCWDM</b>	Water Conservation and Water Demand Management
<b>WCWSS</b>	Western Cape Water Supply System
<b>WEF</b>	World Economic Forum
<b>WMA</b>	Water Management Area
<b>W&amp;S</b>	Water and Sanitation
<b>WRC</b>	Water Research Commission
<b>WSI</b>	Water services intermediary
<b>WSIG</b>	Water Services Infrastructure Grant
<b>WUL</b>	Water Use Licence
<b>WWF</b>	World Wide Fund for Nature
<b>WWTW</b>	Wastewater Treatment Works

#### **Provinces:**

<b>EC</b>	Eastern Cape
<b>FS</b>	Free State
<b>GP</b>	Gauteng
<b>KZN</b>	KwaZulu-Natal
<b>LP</b>	Limpopo
<b>MP</b>	Mpumalanga
<b>NC</b>	Northern Cape
<b>NW</b>	North West
<b>WC</b>	Western Cape

#### **Metropolitans:**

<b>BC</b>	Buffalo City
<b>CCT</b>	City of Cape Town
<b>Ekur</b>	Ekurhuleni
<b>eThek</b>	eThekweni
<b>JHB</b>	Johannesburg
<b>Mang</b>	Mangaung
<b>NMB</b>	Nelson Mandela Bay
<b>Tshw</b>	Tshwane

#### **Conversions:**

1 Megalitre = 1 million litres = 1 000 000 litres = 1 000 kl = 1 000 m<sup>3</sup>

**Exchange rates used:** 1 US Dollar = R16.23 (October 2020)



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# EXECUTIVE SUMMARY

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This market intelligence report (MIR) is written for investors interested in the South African urban water sector, with particular emphasis on the Western Cape region.

The pursuit of water security, resilience, and sustainability is a key driver for investment in the Western Cape water sector due to the recurrent severe drought conditions and expected longer-term water constraints in the region. The National Water and Sanitation Master Plan (2019) estimates that South Africa could have a 10% gap between supply and demand by 2030, even if the planned additional water supply projects are implemented.

However, the Western Cape has planned sufficient additional supply projects to ensure a surplus. Additionally, there is a lack of equitable access to sanitation, with about 14 million people being without safe sanitation. To achieve water security and equitable access to water and sanitation by 2030 and beyond, South Africa will need to do more than reduce water losses and water demand by adopting innovative solutions, such as water efficient and/or waterless off-grid sanitation.

This year's MIR draws on market trends and emerging longer-term investment opportunities to improve water security, resilience, and access to sanitation as key enablers of sustainable economic resilience and socioeconomic development. Specifically, the report focuses on the following opportunities in the municipal water market in South Africa, as municipalities are mandated to provide universal and equitable access to water and sanitation:

- **Reducing non-revenue water** losses is important for achieving water security and reliability of supply, as well as municipal revenue recovery for maintenance, and for off-setting future capital expenditure.
- **Non-sewered sanitation systems** can address the challenge of delivering sustainable sanitation services in new property developments, rural communities, and low-income and informal settlements.



- Beneficiation or **alternative disposal solutions for wastewater sludges** must be developed due to the national ban on liquid wastes at landfills which was put in place in August 2019; the national waste strategy aims to progressively limit solid organic wastes to landfill over the next 10 years.

Key **drivers** of these opportunities are:

- **Water security:** Both private companies and municipalities

are motivated to invest in water projects to reduce non-revenue water losses caused by, among others, pipe leakages, metering errors, billing errors, and theft.

- **Environment, health and safety concerns, and available funding:**

The Sustainable Development Goals of Clean Water and Sanitation (SDG 6), Responsible Consumption and Production (SDG 12), and Climate Action (SDG 13) are supported by grants and funding assistance.

- **Regulatory compliance:**

Wastewater discharge limits, emphasised by reuse planning, national liquid waste ban, and the 2027 Western Cape plan to divert 100% organic waste disposal to landfill (50% realisable by 2022).

- **Policies and government support/incentives:**

National Water and Sanitation Master Plan (2019) prioritises water loss monitoring and reduction, alternative water source development, access

to sanitation for all, and policy changes towards private sector financing for municipal infrastructure.

While the municipal sector represents the largest water opportunities for investors, there are a few barriers specific to this market. They relate to the inability to access funding, capacity constraints, procurement processes, revenue collection, and a lack of locally demonstrated technologies.



South Africa is a water scarce country with a mean average annual rainfall of ~464 mm.

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Opportunity	Key drivers	Barriers	Key market segments
<b>Non-revenue water reduction (NRW)</b> <b>Section 4.1</b>	<ul style="list-style-type: none"> <li>Potential savings (due to reduced water loss &amp; wastage, inaccurate metering and billing, etc.).</li> <li>Increasing water scarcity and droughts.</li> <li>Demonstrated short payback period.</li> <li>Increased project preparation support (DBSA and NT).</li> </ul>	<ul style="list-style-type: none"> <li>Lack of municipal technical capacity.</li> <li>Complex contracting and financing models</li> <li>Lack of locally verified or demonstrated technologies.</li> <li>Acceptance by the public.</li> <li>Financial insolvency of municipalities.</li> </ul>	<ul style="list-style-type: none"> <li>15% reduction in NRW target nationally by 2030, supported by a seed investment of <b>-R676 mil</b> by DHSWS to realise <b>-R7.3 bn</b> per year in savings in bulk water costs nationally (<b>-R740 mil</b> in WC)</li> <li><b>-R5.5 mil</b> in subsidy for smart metering in WC schools</li> <li><b>-R1.2 bn</b> in smart meter installation in CCT over 8 years</li> </ul>
<b>Non-sewered sanitation systems (NSSS)</b> <b>Section 4.2</b>	<ul style="list-style-type: none"> <li>COVID-19 pandemic reemphasised the need for universal access to sanitation.</li> <li>Housing provision pressure.</li> <li>Need for rapid implementation options.</li> <li>Constraints on development due to lack of bulk infrastructure.</li> <li>SDGs/NDP strategies and government initiatives aimed at providing universal access to sanitation.</li> <li>Some informal settlements are on private land, making it difficult to install permanent infrastructure.</li> <li>Increase in water and sanitation service delivery protests.</li> <li>Lack of availability of potable water to flush toilets and use for water borne sanitation.</li> </ul>	<ul style="list-style-type: none"> <li>Policies, bylaws &amp; regulations that make it onerous to install NSSS.</li> <li>Available grant funding for providing access to sanitation is insufficient .</li> <li>Financial insolvency of municipalities.</li> <li>Public acceptance.</li> <li>Negative perceptions about cost and maintenance requirements.</li> <li>Footprint size of NSSS as some informal settlements are densely populated.</li> <li>Lack of locally proven technologies.</li> <li>Lack of appropriate financing models to implement NSSS.</li> </ul>	<ul style="list-style-type: none"> <li><b>-R3.4 bn</b> has been allocated to improve sanitation in schools over the next 2 years.</li> <li>Estimated total capital investment potential of <b>-R41.4 bn</b> in NSSS (<b>-2.44 bn in WC</b>) towards achieving universal access to safe sanitation based on 2018 GHS.</li> <li><b>-R4.7 bn</b> worth of potential NSSS projects in the metros (<b>-2.0 bn in CCT</b>) to replace chemical, bucket toilets, and provide sanitation to households without access.</li> </ul>



Opportunity	Key drivers	Barriers	Key market segments
<b>Wastewater sludge beneficiation</b> Section 4.3	<ul style="list-style-type: none"><li>Increasing landfill disposal fees.</li><li>Transportation costs.</li><li>SDGs (7, 11 and 12)<sup>1</sup>.</li><li>Nitrogen based fertiliser imports threatened by Covid-19 supply chain risks.</li><li>Imminent organic waste to landfill reduction plan and existing liquid waste to landfill ban.</li></ul>	<ul style="list-style-type: none"><li>Current state of policies &amp; regulations (also a potential driver).</li><li>Lack of capital.</li><li>Public and industry perception.</li><li>Financial insolvency of municipalities.</li><li>Producer-beneficiary infrastructure gap (potential driver).</li><li>Lack of locally verified technologies.</li></ul>	<ul style="list-style-type: none"><li>Opportunities to transport and beneficiate sludge to the value of <b>-R330 mil</b> per year across all metros, excluding Tshwane (<b>-R86 mil</b> in WC).</li></ul>



There are emerging opportunities for wastewater sludge beneficiation.  
©GreenCape

<sup>1</sup> Sustainable Development Goals for Affordable and Clean Energy (7), Sustainable Cities and Communities (11), and Responsible Consumption and Production (12)



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# WHAT'S NEW?

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Readers of last year's Water MIR are encouraged to read this year's report in full, as the market intelligence has been updated substantially.



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SUMMARY OF THE  
2021 WATER MIR  
OPPORTUNITIES

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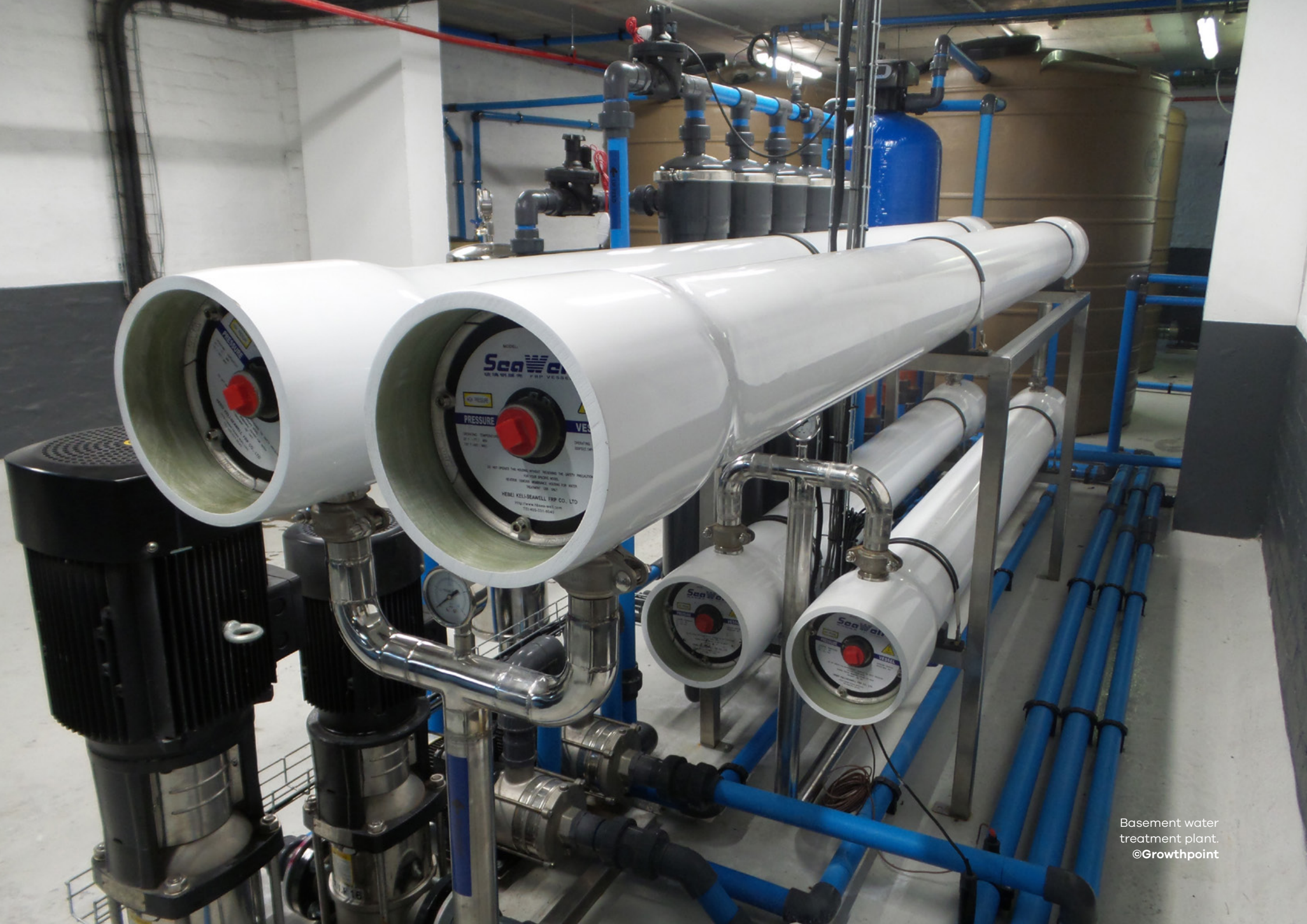
The 2020 report focused on the various emerging long-term investment opportunities for water efficiency, water reuse, and energy efficiency in the agri-processing and municipal market. This year's report highlights additional long-

term investment opportunities in the South African municipal sector that promote sustainable development and water resilience. The COVID-19 pandemic has further emphasised the need for universal access to water

and sanitation. The 2021 report focuses on a detailed analysis of three key municipal market opportunities: water conservation and water demand management (**non-revenue water — NRW reduction**), alternative sanitation

(**non-sewered sanitation systems — NSSS**) and resource recovery (**beneficiation or alternative disposal of wastewater sludges**).

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Basement water  
treatment plant.  
©Growthpoint



# **INTRODUCTION AND PURPOSE**

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This market intelligence report (MIR) has been compiled by GreenCape's Water Sector Desk. It is written for investors interested in the South African urban water sector, with particular emphasis on opportunities in the Western Cape and South African metropolitan areas.

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The key drivers of growth and long-term investment in the water sector in the Western Cape and more broadly in South Africa are three-fold: increasing resilience to recurrent droughts; ensuring water security for sustainable economic growth; and achieving universal access to water and sanitation.

This year's report focuses on investment opportunities within the municipal market: water conservation and water demand management (non-revenue water – NRW reduction); alternative sanitation (non-sewered sanitation systems – NSSS); and resource recovery (beneficiation or alternative disposal of wastewater sludges).

The report provides a sector overview ([Section 2](#)), which outlines water supply and sanitation in both the South African and Western Cape context. This is followed by an overview of relevant policies and regulations ([Section 3](#)) that are attendant to water technology investment opportunities and barriers to realising these opportunities ([Section 4](#)).

The final sections focus on finance and incentives ([Section 5](#)), give an overview of the Western Cape as Africa's growing greentech hub ([Section 6](#)), and explain GreenCape's work within the green economy space ([Section 7](#)).

While this report focuses on the municipal water market, there are inherent links between agricultural and urban water use, and between biosolids production and their land application. Similarly, there are links between organic waste valorisation and energy production related to treating wastewater, as well as resource recovery opportunities throughout the water value chain. We have included these opportunities where they fall within the water value chain; however, please consult the [2021 Sustainable Agriculture Market Intelligence Report](#), [Waste Market Intelligence Report](#) and [Energy Services Market Intelligence Report](#) for opportunities specific to those sectors.



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## **SECTOR OVERVIEW**

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Water scarcity and inequalities in access to water and sanitation are major challenges that fall within the remit of the South African government. These challenges present a substantial opportunity in the municipal water sector for investors and businesses.

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Theewaterskloof Dam (circa 2016): Although the Western Cape drought has largely been overcome, water scarcity remains a key driver in the national water sector.  
©Bruce Sutherland  
(City of Cape Town)



## 2.1. South African context

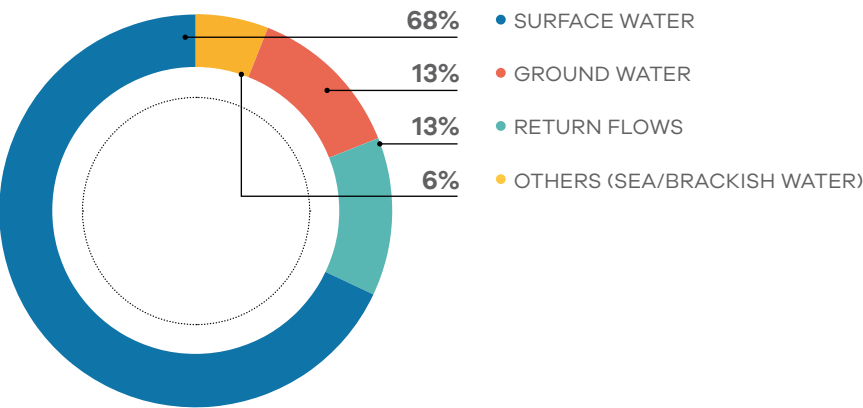
South Africa (SA) is ranked as the 30<sup>th</sup> driest country in the world. In 2018 the water crisis ranked as the second highest risk for doing business in SA, behind unemployment (WEF 2019), which was at a rate of ~30% prior to the COVID-19 pandemic (StatsSA 2020). In addition to being a water-stressed country, South Africa is also characterised by

an uneven rainfall distribution, and extreme climate resulting in evaporation rates that often exceed precipitation. The country has a reliable yield (i.e. supply from current infrastructure) of around 15 billion kl/year (at 98% assurance of supply – or 2% annual probability of supply failure). The majority of this yield is from surface water (68%) and return flows that support surface water (13%), as shown in **Figure 1**.

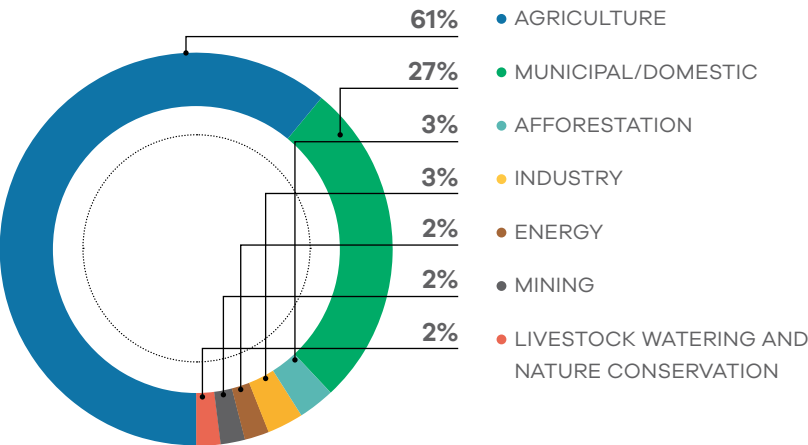
Agriculture is the largest water use sector (61%), followed by municipalities (27%), which cover residential, commercial, and industrial water users supplied by municipalities (**Figure 2**; DWS 2019a). The relative proportion of municipal and agricultural use differs between provinces and municipalities, depending on human settlement patterns and local economy.

Revenue from the sale of water and provision of sanitation services in South Africa in 2019/20 totalled R51.6 billion and R20.6 billion respectively (StatsSA 2020). The distribution of this value among water users is shown in **Figure 3**, on the next page. From the municipal sales, about 58% typically comes from domestic residential use, and 40% from commercial and industrial use.<sup>2</sup>

**Figure 1:** Water sources in South Africa<sup>2</sup> (DWS 2017a)

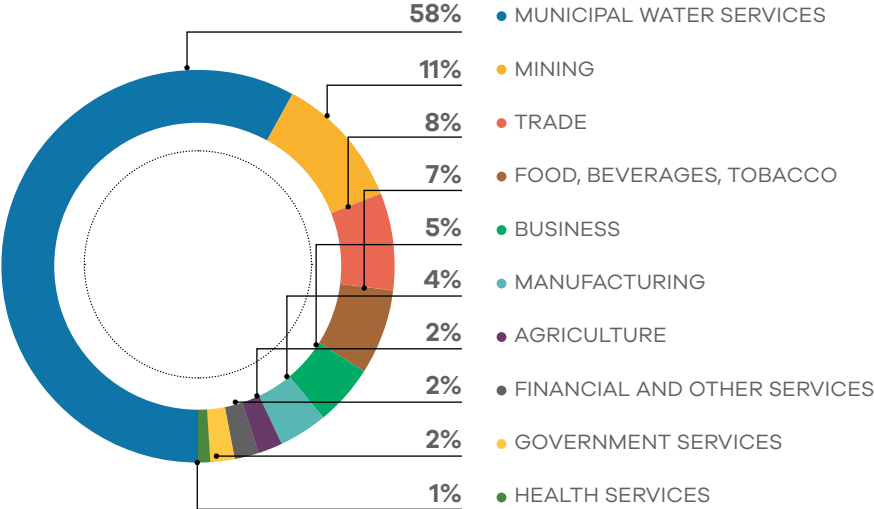


**Figure 2:** Water use in South Africa (DWS 2019a)



<sup>2</sup> 'Return flows' refers to water that is used and then recycled.

**Figure 3:** Financial value of water sales by sector (GreenCape 2017)



Despite South Africa being a water-scarce country, the national average consumption is around 233 litres/capita/day (l/c/d). Consumption in the Western Cape ranges around 201 l/c/d. These figures are much higher than the international benchmark of 173 l/c/d (DWS 2019a)<sup>3</sup>. Forecasts indicate that water demand will exceed supply by 10% by 2030 (DWS 2019a).

This will be driven by low water tariffs, inefficient use, inadequate cost recovery, leakages, inappropriate infrastructure choices (e.g. water-borne sanitation in a water-scarce country), and increased demand in the municipal, industrial, and agricultural sectors (Donnenfeld et al., 2018).

The growth in demand by the municipal sector is expected to be the greatest, which is partly driven by urbanisation, but also by increased industrial production, commercial activity, and population growth.

A model of the future water balance for South Africa indicates that if planned additional water supply is added, and realistic

water efficiency<sup>4</sup> is achieved, the gap between supply and demand by 2030 can be narrowed substantially (Figure 4; DWS 2019). The additional water supply sources are mainly groundwater, desalinated seawater in coastal areas, and wastewater reuse (see Figure 5 for distribution of new supply between regions).

<sup>3</sup> These figures are based on the system input volume divided by the population served. The system input volume includes commercial and industrial demand, and water losses through infrastructure leaks.

<sup>4</sup> The water demand management target aims to reduce the per capita water consumption by 26% from 2018 to 2030 to match the international benchmark. During the 2015-2018 drought in the City of Cape Town, a far greater (~50%) per capita reduction in water consumption was achieved over a period of four years, which suggests that this target is highly achievable.

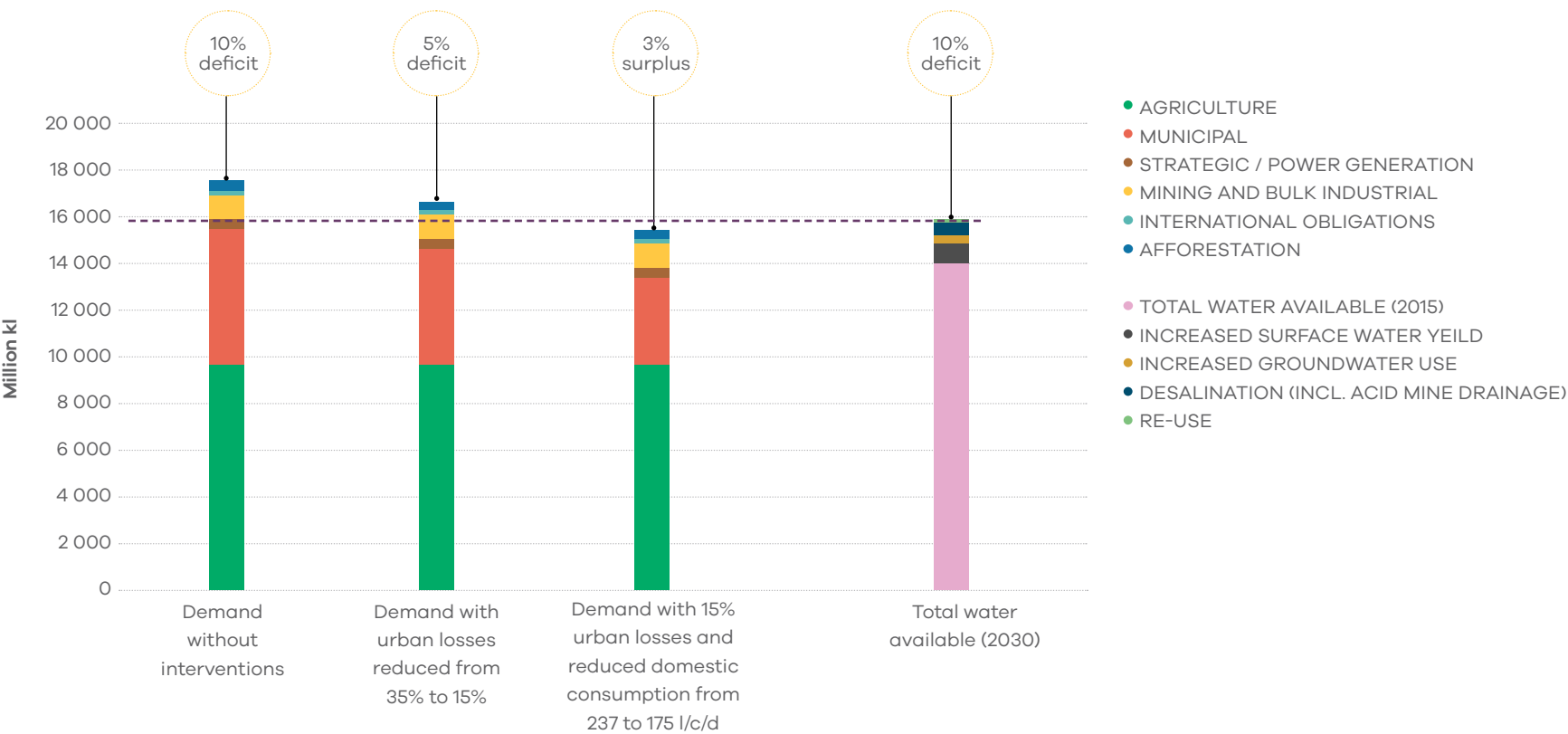
The largest new water sources are planned in the Orange River and Vaal River catchments, followed by the Western Cape and Richards Bay (DWS 2019). Furthermore, implementation of adaptation projects that promote water conservation and demand management would aid

in narrowing the supply-demand gap. Some projects such as the Working for Water and Working for Wetlands programmes that involved the removal of alien trees and protection of water resources, respectively, have been implemented and are expanding to encourage further job creation

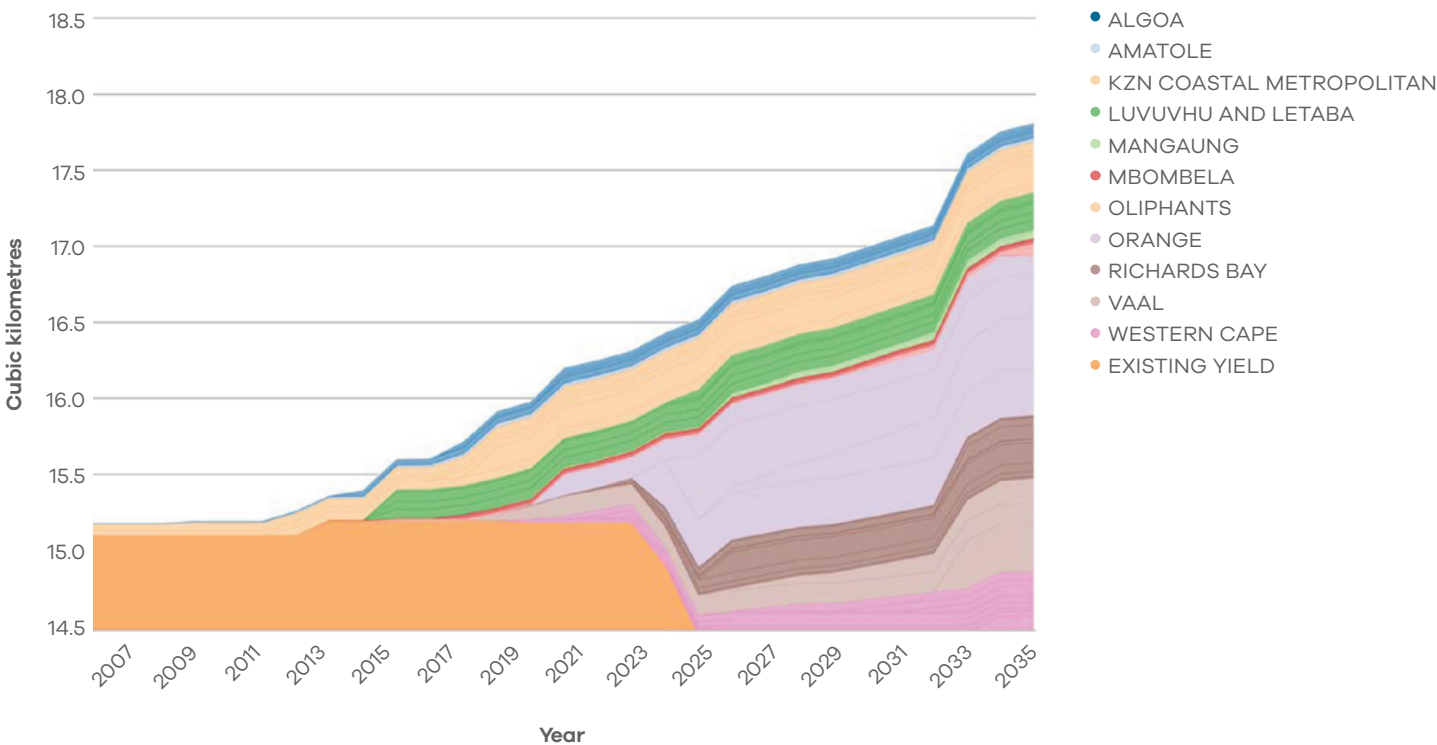
(DFFE 2020). The recently published national economic reconstruction and recovery plan (ERRP) highlights the retrofitting of public and private buildings with technologies to improve water efficiency as a major part of South Africa’s green agenda.

The extension of the programme to public buildings has the potential to build a labour intensive local industry (Presidency 2020).

**Figure 4:** National water balance projections by 2030 with and without critical interventions (DWS 2019a)



**Figure 5:** Planned increases in yield extracted from all published large-scale reconciliation strategies in South Africa (Donnenfeld et al., 2018).



While total demand is projected to increase despite increased efficiency, and planned augmentation schemes can narrow the supply gap, it is important to note that the augmentation sources must be diversified. Climate change models predict that SA will receive less rainfall, but also that the incidence of extreme climate events will increase. The drought

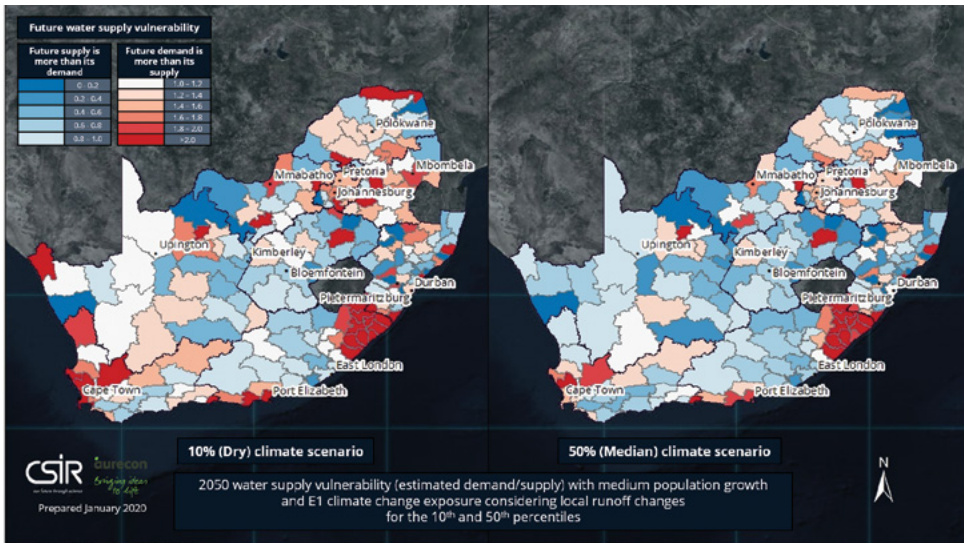
in the Western Cape has been well documented (see [2019 Water MIR](#)), and this was preceded in 2015 by the lowest total rainfall in recorded history (since 1904) for the whole country. Towards the end of 2019, the Eastern Cape and Northern Cape were declared disaster areas by the national government due to the ongoing droughts in these provinces. In March 2020 the national government declared

drought as a national state of disaster alongside COVID-19. The drought-induced national state of disaster was revoked in July 2020 as some parts of the country had received good rains, but areas such as Nelson Mandela Bay Metro are still under severe water restrictions due to water shortages. These events highlight the need to reduce reliance on surface water. The NW&SMP (DWS 2019a) specifies

that groundwater, wastewater reuse, and desalination should increasingly contribute to the national water supply mix.

The supply risks based on changing rainfall patterns and population growth will vary by region. By 2050, many parts of South Africa (including major industrial zones) are expected to be vulnerable to water supply risks ([Figure 6](#)).

**Figure 6:** Predicted water supply vulnerability in 2050, under medium population growth and different climate change exposure scenarios<sup>5</sup> (Green Book 2019).



[VIEW MAP IN MORE DETAIL](#)

An estimated 40% of South Africa’s wastewater is untreated (Donnenfeld et al., 2018). Furthermore, ~56% of the more than 1 150 municipal wastewater treatment works (WWTWs) and ~44% of the 962 water treatment works (WTWs) in the country are in a poor or critical state, while ~11% of the WWTWs are completely dysfunctional.

The resulting raw water pollution from untreated wastewater and poorly managed WWTWs present a significant environmental challenge, as well as a health and socio-economic risk to vulnerable communities that access water directly from rivers. Additionally, poor surface water quality increases treatment costs for potable uses, and has a negative effect on agricultural yields.

In 2019 approximately 90% of households had access to piped or tap water in their dwellings, either off-site or on-site, and ~83% had access to improved<sup>6</sup> sanitation facilities (StatsSA 2019a). However, insufficient water infrastructure maintenance and investment, vandalism, urbanisation, and immigration may have hampered growth or led to the negative growth in access to water and sanitation. Meeting the Clean

Water and Sanitation Sustainable Development Goal (SDG 6) and National Development Plan’s (NDP) 2030 targets relating to water and sanitation will require investing in rapid acceleration of infrastructure provision towards service delivery (UN-Water 2020; NPC 2012). South Africa’s Economic Reconstruction and Recovery Plan (ERRP) has targeted an increase in access to basic services as a method for both job creation and poverty alleviation.

It is estimated that ~R90 billion per year of investment is needed in water and sanitation infrastructure over the next 10 years (DWS 2017a; DWS 2019a) in order to ensure reliable water supply and wastewater treatment. This includes refurbishing and upgrading existing infrastructure, and new infrastructure to support population and economic growth. Budgeted funding of R54.2 billion in 2020/21 falls well short of what is required, but estimated medium-term budgets indicate that the national government has plans in place to reduce the shortfall (Table 1). Public funding gaps provide a potential opportunity for private sector financing of water and sanitation projects, as outlined in Section 4.

<sup>5</sup> The 50% refers to the 50th percentile (median), while 10% refers to the 10th percentile (least likely of occurrence) in terms of probability when projected to 2050 assuming normal distribution (www.greenbook.co.za)

<sup>6</sup> These facilities are defined as flush toilets connected to a public sewerage system or a septic tank, or a pit toilet with a ventilation pipe.

**Table 1:** Required, budgeted, and projected public sector funding for water and sanitation services and infrastructure (National Treasury 2021)

Funding (R billion)	Revised Estimate 2020/21	Medium term estimates 2021/22	Medium term estimates 2022/23	Medium term estimates 2023/24	Average year-on-year increase (%)
<b>Community development:</b>	16.1	16.7	17.3	17.9	3.6%
Regional and local water and sanitation services (subsidies for free basic services)	10.9	11.2	11.8	12.2	4.0%
Portion of human settlements (provincial) spent on water and sanitation	5.2	5.5	5.6	5.7	2.8%
<b>Water and sanitation infrastructure:</b>	38.1	34.8	40.2	39.9	1.6%
Water resource and bulk infrastructure	28.6	25.7	30.6	30.0	1.6%
Regional Bulk Infrastructure Grant	6.1	5.4	5.8	6.0	-0.7%
Water Services Infrastructure Grant	3.4	3.6	3.7	3.9	4.7%
<b>Total planned public sector funding for water and sanitation</b>	<b>54.2</b>	<b>51.5</b>	<b>57.5</b>	<b>57.8</b>	<b>2.2%</b>
<b>Total estimated annual capital requirements (DHSWS 2019):</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	<b>90.0</b>	–
Water supply infrastructure	70.0	70.0	70.0	70.0	–
Wastewater infrastructure	20.0	20.0	20.0	20.0	–
<b>Funding shortfall</b>	<b>-35.8</b>	<b>-38.5</b>	<b>-32.5</b>	<b>-32.2</b>	<b>-3.5%</b>

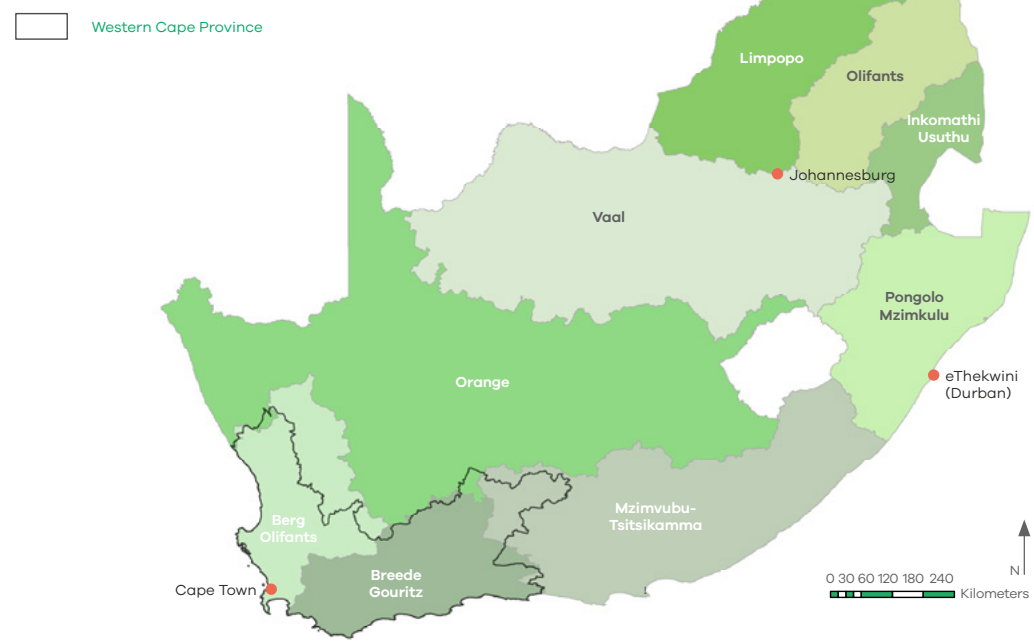
## 2.2. Western Cape context

The Western Cape Province, which is in the South West corner of South Africa, falls predominantly within two water management areas (WMAs), the Breede-Gouritz and the Berg-Olifants (**Figure 7**).

Irrigation to support agriculture constitutes the main water use in these two WMAs, followed by urban water use. While South Africa is one of the most water-stressed countries in the world with a medium to high baseline water stress (20-40% average annual withdrawal of available water supply), the majority of the Western Cape falls within the two highest water stress categories (40-80% and >80%) (Water Resource Institute 2019)<sup>7</sup>.

<sup>7</sup> Water Resources Institute (<https://www.wri.org/blog/2019/08/17-countries-home-one-quarter-world-population-face-extremely-high-water-stress>)

**Figure 7:** Water Management Areas in South Africa<sup>8</sup> (GreenCape 2015)



**2.2.1. Western Cape Water Supply System**

The Western Cape Water Supply System (WCWSS), which supplies water to several municipalities within the Berg-Olifants WMA, is one of the most important supply systems in the country. It supplies water to a region that produces 84% of the province’s gross domestic product (GDP), and approximately 14% of the national GDP (City of Cape Town 2019).

The WCWSS is a complex, interlinked system of dams, pipelines, and distribution networks that supplies water to the City of Cape Town (CCT), West Coast District Municipality (which supplies water to Swartland, Saldanha Bay, and Bergrivier local municipalities), Stellenbosch, Drakenstein, and Witzenberg local municipalities, and certain agricultural users.

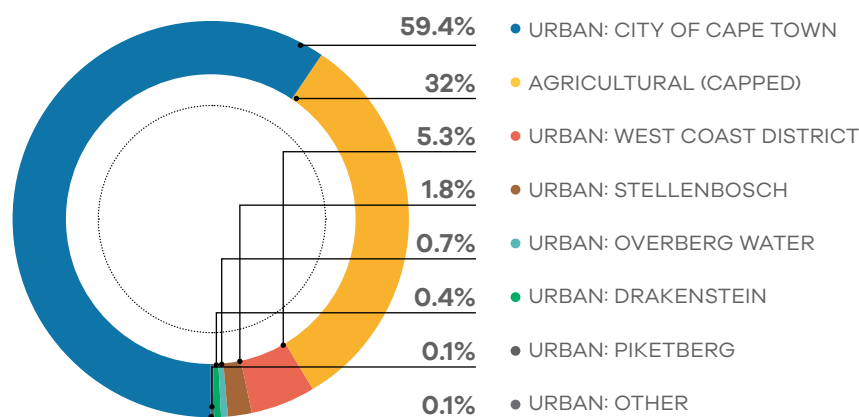
The total water allocation for the system is ~590 million m<sup>3</sup> per year, which is allocated to various end users (Figure 8). Approximately two-thirds of the allocation is for urban use (including residential, commercial, and industrial use), and the remainder is allocated for agriculture, which is predominantly used in the summer months (DWS 2019b).

Even without making provision for the ecological reserve, the total allocations exceed the 2018 revised system yield of 547 million m<sup>3</sup> per year (DWS 2018). There are no further opportunities to build additional large dams to augment the supply (DWS 2015). Consequently, even prior to the drought, the system was already constrained. The estimated average combined urban and agricultural water demand for 2009/10 – 2018/9 was 538 million m<sup>3</sup> (DWS 2018).

SEE 2019 WATER MIR  
FOR MAP WITH DETAILS

<sup>8</sup> Western Cape outlined in black.

**Figure 8:** Overview of Western Cape Water Supply System allocations by type (DWS 2018)



A drought, which is linked to below-average rainfall, particularly in 2016 and 2017, placed additional strain on the WCWSS. By the end of the 2020 hydrological year (31 October 2020), the WCWSS dam levels had recovered to ~99%. Water restrictions for the City of Cape Town (CCT) were lifted at the end of the 2020 hydrological year, and demand has remained well below 700 MLD for most of the year. The ongoing effective demand side management, and resultant lower water use, was

a key enabler in the recovery of dam levels. At the end of October 2020, the CCT's average water consumption was ~30% less than its allocation of 358 million m<sup>3</sup>/yr (981 MLD) from the WCWSS (CCT 2020a). This highlights the importance and effectiveness of water conservation and water demand management (WCWDM), and water efficiency interventions, and the key role it has in managing the use of water resources. However, non-revenue water (NRW) for the CCT remains at

~31.5% (Simawo, 2020). Lower than average rainfall will necessitate ongoing demand-side reduction to avoid dam levels approaching the critical 10% level. The Gouritz Catchment, which includes the Greater and Klein Karoo area and Southern Cape coastal area, is still at a critical level with a capacity of 23.7% at the end of November 2020 (WCG 2020<sup>9</sup>).

### 2.2.2. Long-term planning

The climate projections for the Western Cape indicate a warming trend as well as drying in many areas, with longer periods between increasingly intense rainfall events (DEADP 2014). It also remains to be seen whether the recent drought represents a 'step-change' in the rainfall patterns (such as was experienced by Perth in the 1970s), or whether the decrease in average annual rainfall will occur gradually. Additionally, population and economic growth will place an additional burden on water supply and sanitation systems, which in turn will have a negative impact on the province and consequently the country's economy.

Water, sanitation, and hygiene (WASH) will continue to be a focus for the Western Cape. It presents a platform on which government, business, investors, and citizens can collectively implement water and sanitation access and water efficiency, as well as resource recovery initiatives (water, energy and/or materials), to increase resilience.

In order to address future water constraints, reconciliation studies are conducted to reconcile the gap between future demand and supply. The WCWSS reconciliation strategy study was completed in 2007, and annual status updates are produced by the Department of Human Settlements, Water and Sanitation (DHSWS), formerly the Department of Water Affairs and Forestry (DWAF), and later the Department of Water and Sanitation (DWS). The latest available update (2018) compares several future water balance assessment scenarios.

<sup>9</sup> <https://www.westerncape.gov.za/110green/>

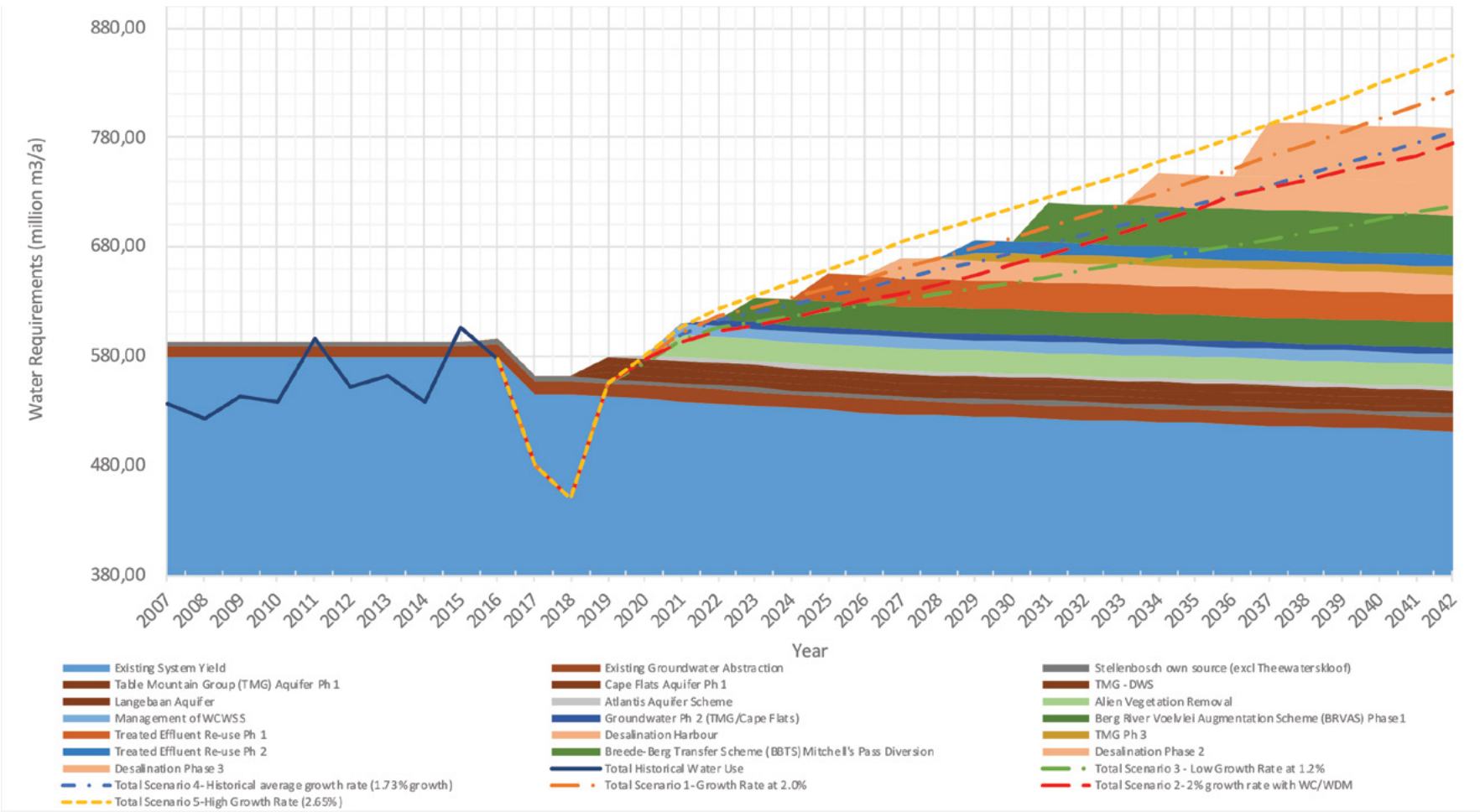
Figure 9 presents the most realistic base scenario of future water supply without additional water conservation and demand

management interventions. In terms of demand, there are a number of scenarios. Scenario 1 assumes a projected 2.8% p.a.

growth rate in water demand (DWS 2018). Solid fills show the planned water supply interventions, along with their height (or stacked

thickness) indicating the estimated yields for the different interventions.

Figure 9: WCWSS planning scenario reconciliation of supply and demand<sup>10</sup> (DWS 2018) (A larger version of this figure is available on request)



<sup>10</sup> Excludes the recently updated City of Cape Town water strategy (Table 2).

Augmentation schemes include potable water reuse (from WWTWs), groundwater development (new resources and artificial recharge), and large-scale permanent seawater desalination. In this regard, long-term plans have been in place for several years, and many of the planned projects were brought forward and re-assessed considering the drought and need for economic water resilience (see **Figure 29 in 2019 MIR** and **Table 8 in 2020 MIR**).

The CCT has implemented its groundwater schemes while other planned augmentation schemes are at different project phases (**Table 2**). To date, the CCT augments its surface water with ~7 megalitres per day (MLD) from groundwater and springs (CCT 2021<sup>11</sup>).

This is likely to rise by ~40 MLD from the recently commissioned Table Mountain Group (TMG) aquifer when it is fully operational. Other phased augmentation schemes will contribute a total of ~240 MLD by 2026 (**Table 2**).

Furthermore, the CCT supplies ~75 MLD of treated effluent from its WWTWs to ~950 registered users, mainly farmers and businesses, through a 277 km permanent pipeline connection (CCT, 2020d). This supply network will be extended to ~938 km in the next 10 to 15 years.

SEE 2019  
WATER MIR

SEE 2020  
WATER MIR



<sup>11</sup> <https://resource.capetown.gov.za/documentcentre/Documents/City%20research%20reports%20and%20review/damlevels.pdf>

**Table 2:** Augmentation schemes for the City of Cape Town (CCT Water Outlook October 2020)

Intervention	First water	Capacity (MLD <sup>12</sup> )	Total CAPEX (R million)	Unit CAPEX (R million)	Operating cost (R/kl)
Table Mountain Group Aquifer – Steenbras	Jul-20	25	468	18.7	5.5
Table Mountain Group Aquifer – Nuweberg	Jul-23	15	523	34.9	5.5
Table Mountain Group Aquifer – Groenlandberg	Nov-23	12	376	31.3	2.2
Cape Flats Aquifer – Strandfontein	Jul-21	5	378	75.6	6.5
Cape Flats Aquifer – Hanover Park	May-22	4	158	39.4	8.5
Cape Flats Aquifer – Strandfontein North and East	Dec-22	15	772	51.5	6.5
Cape Flats Aquifer – Philippi	Dec-24	6	434	72.3	8.5
Cape Flats Aquifer – Mitchells Plain	Jul-25	20	673	33.7	8.5
Atlantis Aquifer Rehabilitation and Expansion	Jul-22	16	314	19.6	8.5
Berg Voëlrvlei River Augmentation Scheme	Jul-23	40	–	–	4.62
Water Reuse – Faure New Water Scheme	Jul-25	70	1882	26.9	5.7
Desalination	Dec-26	50	1800	33-40	9.0
Alien Vegetation Clearance	–	–	372	–	–
Improved Supply System Management (WCWSS)	To be confirmed once more detailed information becomes available				
Water Conservation/Demand Management					

<sup>12</sup> 1 MLD = 1 megalitre per day, or 1 000 000 litres per day, or 1 000 kl per day

## 2.3. State of municipalities in South Africa

Municipalities play an important role in providing water and sanitation services, and as such constitute a key market in the water sector. However, there are a number of barriers within the market, one of which can generally be described as capacity. An analysis of municipalities in South Africa that captures various aspects of 'capacity' as they relate to water projects, indicates that only about 23% of municipalities have a 'good' score related to capacity<sup>13</sup> to implement water projects. Similarly, the National Business Initiative (NBI) has found that only ~20% of municipalities in South Africa are suitable for water public-private partnerships (PPPs) (NBI 2019). One further barrier is that smaller municipalities do not have credit ratings to compete in credit markets to access finance.

Other barriers relating to technical capacity, jurisdiction to service informal settlements on private land, and legislation are discussed in [Section 4.5](#).

The USAID Water, Sanitation and Hygiene Finance (WASH-FIN)<sup>14</sup> project has recently assessed the credit rating of 21 select intermediary (secondary) municipalities in South Africa, with 18 of these resulting in an investment grading. This indicates that there is a greater potential for external financing for intermediate municipalities than is currently being realised by the municipalities. There may be several reasons for this, which could vary among municipalities. Such reasons could include low appetite for debt, the long-term nature of infrastructure financing vs shorter term political cycles, or technical and managerial staff turnover.

The municipalities with 'intermediate scores' on the WASH-FIN Municipal Grading Index in most cases need select interventions to assist them in accessing credit for infrastructure projects. In addition, they are well suited to projects that do not necessarily require debt, such as service level agreements for water efficiency and wastewater sludge beneficiation.

## 2.4. Municipal market

The urban water and wastewater market is centered around municipalities, which are typically the Water Services Authorities and Water Services Providers for urban areas. In most cases, municipalities are supplied with raw or bulk water by the National Department of Human Settlements, Water and Sanitation (DHSWS) or their local water boards. Municipalities then supply businesses and households via water reticulation infrastructure which covers more than 290 000 km of pipelines (StatsSA 2016a).

Information related to all these entities is therefore included in this section as part of the broader municipal market value chain, and how they fit into a global context.

In South Africa, municipalities, and in particular metropolitan municipalities, represent a significantly large and growing market for water and sanitation (W&S) technologies and services. In the 2021 National Treasury Budget, R114.9 billion has been estimated to be spent on W&S over the next three years, accounting for ~68.9% of public sector funding for water and sanitation. About a third of the budget, R51.9 billion, has been allocated to community development programmes over the next three years. The annual capital expenditure on W&S related projects by the eight metropolitan municipalities in SA was just over ~R7.3 bn in the most recent financial year ([Figure 11](#)), made up of a combination of grants (~25%), and internal and loan financing.

<sup>13</sup> The criteria used include skills/capacity of senior/executive municipal staff to manage municipal finances effectively and manage infrastructure projects; financial standing of the municipality to access commercial or development finance institution (DFI) finance; skills/capacity among water department staff to successfully motivate for and implement water infrastructure projects.

<sup>14</sup> <https://www.globalwaters.org/WASH-FIN>

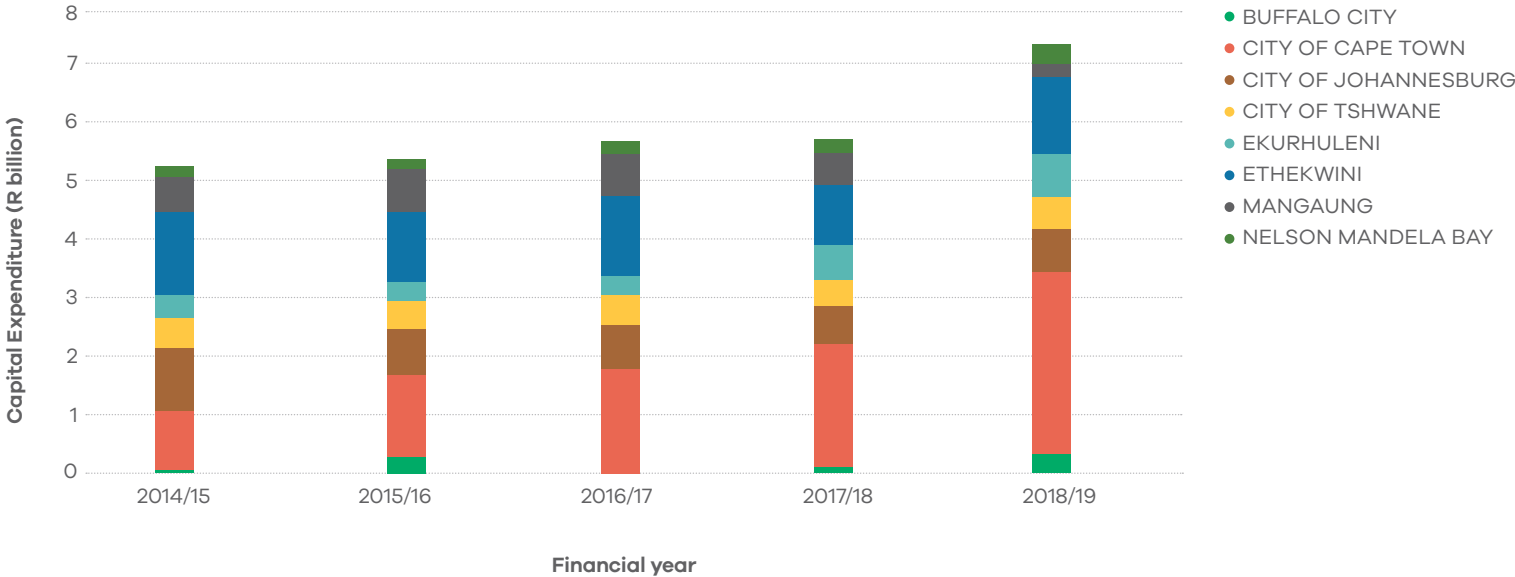
The average year-on-year increase between 2014/15 and 2018/19 was ~3% (equal to inflation as of August 2020), with the exception being the CCT, where annual spend has increased by 14% or more in each of the financial years represented.

Of the R51.9 billion budgeted for W&S infrastructure in the medium term, R28.4 billion is projected to fund the Regional Bulk Infrastructure Grant (RBIG) and the Water Services Infrastructure Grant (WSIG) for new and existing projects.

Funding from these grants will be used to implement two mega projects — 26 large and more than 280 small regional bulk and water services infrastructure projects (National Treasury 2020). An additional R2.4 billion from the Upgrading of Informal Settlements Grant (UISG) was allocated in 2020

for the provision of W&S services in informal settlements in response to the COVID-19 pandemic. However, the NW&SMP estimates that a further R12 billion in funding would be needed each year over five years to refurbish and upgrade existing W&S infrastructure (DHSWS 2019).

**Figure 10:** Capital expenditure on water and sanitation projects undertaken by metropolitan municipalities between 2014/15 and 2018/19<sup>15</sup>



<sup>15</sup> All figures compiled from annual reports of the respective metropolitan municipalities, except for Johannesburg for 2014/15 and 2015/16, which were extracted from Johannesburg Water annual report.



Zandvliet Treatment Plant.  
©Bruce Sutherland  
(City of Cape Town)



# **POLICIES AND REGULATIONS**

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This section provides an overview of the regulatory environment for the urban water sector<sup>16</sup>.

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<sup>16</sup> The section does not comprehensively cover all relevant legislation; it highlights key information that may be useful to potential investors.



Technician at Zandvliet  
Wastewater Treatment Works.  
©City of Cape Town

## 3.1. National legislation

### 3.1.1. The National Water Act

The National Water Act (36 of 1998) (NWA) provides the legal framework for the effective and sustainable management of water resources (including surface water and groundwater) by the Department of Human Settlement, Water and Sanitation (DHSWS) on behalf of the national government. The NWA gives DHSWS the overall responsibility and authority to manage the use of water; protect water quality; allocate water; and promote inclusive water management.

The NWA under Section 21 describes 11 different ‘water use’ activities, which include taking and storing water, reduction of stream flow, waste discharges and disposals, altering of watercourses, abstraction of underground water, recreation, and any controlled activities which detrimentally affect water resources.

Section 26 regulates water use activities, design, construction, and operation of any waterworks, including the registration of respective personnel. This is particularly relevant to alternative water supply projects, including water reuse. Generally, a water use must be licensed unless it is listed in Schedule I, is an existing lawful use (ELU), is permissible under a general authorisation (GA), or if the need for a water use licence (WUL) is waived.

### 3.1.2. Categories of legal water use

The NWA classifies any lawful water use under four categories:

#### 3.1.2.1. Schedule 1

Generally it applies to low volume (reasonable) water use with low impact activities consistent with domestic use (non-commercial uses), recreational use, livestock watering, and for emergencies. This water use is permissible and does not require licensing or registration<sup>17</sup>.

Residents may use groundwater on their properties for reasonable domestic use without a licence<sup>18</sup>. However, water use entitlement under Schedule 1 does not supersede and is subject to any limitation by any other law, ordinance, by-law (**section 3.2**), or regulation set by the responsible authority in that area, e.g. municipality and provincial government.

#### 3.1.2.2. Existing Lawful Use

Legal water use obtained under the Water Act (54 of 1956) two years prior to the commencement of NWA is considered as existing lawful use (ELU) and is subject to terms and registration under the NWA. However, such users must prove with relevant records that their water use existed before 1998, and this must be verified and validated by the DHSWS.

#### 3.1.2.3. General authorisation

General Authorisations (GAs) replace the need for a licence in terms of Section 21 of the NWA as outlined in a Government Notice (GN) and is site specific. There is a GN for each water use activity which sets the limits and circumstances suitable for the issuance of a GA (NWA 1998)<sup>19</sup>. Businesses involved in water use activities that are neither registerable under Schedule 1 nor under ELU must register the use(s) under a GA or apply for a WUL. The free registration of a GA through DHSWS typically takes a few weeks.

<sup>17</sup> Although in some cases the local municipality may require registration.

<sup>18</sup> Municipalities may still require registration of boreholes or well points — see Section 3.2.3.

<sup>19</sup> For the list of site specific GAs, see <https://cer.org.za/virtual-library/legislation/national/water/national-water-act-1998>.

#### 3.1.2.4. Water use licence (WUL)

A WUL applies if the water use activities cannot be covered under Schedule 1, ELU, or GA in accordance with Section 21 of the NWA. A WUL application may take up to 300 working days. The government has committed to ensuring that for the following sectors, a WUL is issued within a shorter timeframe: 60 days for agriculture, 80 to 95 days for infrastructure projects from state-owned enterprises and municipalities, and 120 days for mining.

#### 3.1.3. The National Building Regulations and Building Standards Act

In terms of design and construction, water systems must be consistent with the National Building Regulations (NBRs) under the National Building Regulations and Building Standards Act, Act 103 of 1977, which governs all building and construction work in South Africa. At present, the NBRs do not include provisions relating to water efficiency or alternative water supply; however, a few years ago the Department of Trade, Industry and Competition (dtic) initiated the process to include these aspects. It is unclear how long this process will take.

#### 3.1.4. National Environmental Management: Waste Act (59 of 2008)

The national norms and standards under the Act prohibit the landfill disposal of:

- liquid waste with a moisture content >40%, angle of repose <5°, free flowing when transported or at ≤60 °C (banned since 2019);
- brine or waste with a high salt content (>5%) and a leachable concentration for total dissolved solids of >100 000 mg/l (ban effective from 2021).

The National Waste Management Strategy is targeting **organic waste**<sup>20</sup> diversion from landfill. In fulfilling this strategy, the Western Cape Province will limit the volume of organic wastes permitted at landfills to 50% in 2022, and 0% in 2027<sup>21</sup>.

#### 3.1.5. Other key national legislation and standards

Other key national laws and regulations that may be relevant to projects in the water sector are listed in [Table 3](#).

Further information can be obtained from the responsible authorities indicated.

<sup>20</sup> Relevant to sludge produced at municipal WWTWs.

<sup>21</sup> For more details, please refer to the [Waste Market Intelligence Report 2021](#).

**Table 3:** Other key national legislation and standards

Authority	Document	Application
Department of Human Settlements, Water and Sanitation	National Water and Sanitation Masterplan (2019)	While not an act or legislation, it is an important guiding document to inform the development of the water sector in accordance with national priorities.
	Water Services Act (108 of 1997)	Relevant to the regulation of water and sanitation services provided by municipalities and water service authorities.
	Guidelines for the utilisation and disposal of wastewater sludge (2008)	Published to assist municipalities with proper management and safe disposal options, these guidelines include a number of options for managing sludge, from composting and thermal treatment, to the manufacturing of bricks. Included in the guidelines are the methodologies to reduce or remove the inherent pathogens present in the sludge.
Local Government	Municipal Systems Act (32 of 2000)	Provides for the core principles, mechanisms and processes that are necessary to enable municipalities to move progressively towards the social and economic uplift of local communities, and ensure universal access to essential services that are affordable to all.
Department of Forestry, Fisheries and the Environment (DFFE)	National Environmental Management Act (107 of 1998)	Relevant to environmental authorisations.
	National Environmental Management: Integrated Coastal Management Act (24 of 2008)	Regulates the discharge of brine to the ocean.
	National Environmental Management: Air Quality Act (39 of 2004)	Regulates the thermal treatment of sludge.
Department of Trade, Industry and Competition (dtic)	Industrial Policy Action Plan (IPAP) 2018/19 — 2020/21	Highlights water and sanitation as a key sectoral focus area.

**Table 3 continued...**

Authority	Document	Application
South African Bureau of Standards (SABS)	South African National Standard for Drinking Water (SANS 241: 2015)	Specifies the general safety and performance requirements for potable water.
	South African National Standards (SANS 30500: 2019) for non-sewered sanitation systems (NSSS)	Specifies the general safety and performance requirements for design and testing as well as sustainability considerations for NSSS.
National Treasury	Preferential Procurement Policy Framework Act (5 of 2000)	Makes provision for the dtic to designate certain areas for local production and content. Local content designation is assessed according to the SABS through the technical specification number SATS 1286:2011 and SANS 1286:2017.
Department of Agriculture, Land Reform and Rural Development	Fertilisers, Farm Feeds, Seeds and Remedies Act 36 of 1947	Makes provision for registration and regulates the importation of composts, fertilisers, farm feeds, sterilising plants, and certain remedies.

## 3.2. Municipal by-laws and tariffs

Municipalities have the constitutional competence to enact laws (known as by-laws) in respect of water and sanitation services, regulated by the Municipal Systems Act (32 of 2000) and the Water Services Act (108 of 1997). These by-laws have the same power and force as other national and provincial legislation and must be made publicly available.

The Department of Water Affairs and Forestry (DWAF), as it was known at the time, developed model water services by-laws for municipalities in the early 2000s. The model by-laws included provisions to empower municipalities to prevent wasteful use of water, impose water restrictions, require large users to submit annual water audits, and specify standards relating to the quality of fittings. The by-laws contained general clauses relating to water efficiency, but left the specifics to the municipality to decide.

Several municipalities have developed water by-laws based on these model by-laws.

Municipal by-laws also include provisions relating to the discharge of wastewater and industrial effluent to sewer. Such provisions may include the maximum discharge limits for various water quality parameters, and the requirement for an industrial discharge permit. Wastewater that exceeds the water quality limits may incur surcharges, or denial of a permit to discharge to sewer.

### 3.2.1. Water restrictions

The National Department of Human Settlements, Water and Sanitation (DHSWS) is responsible for imposing restrictions on different user categories in catchments facing water supply constraints. Municipalities then pass these restrictions on to their water users. Restriction levels impose volume limits, time limitations, and bans on certain types of water use in order to decrease demand during periods of water insecurity.

Restriction levels and their requirements vary from municipality to municipality. Most municipalities have up to five restriction levels — the higher the restriction level, the greater the limitations imposed. At the time of writing, water restrictions were still in place in most of the municipalities in the Western Cape, while the CCT had lifted water restrictions.

### 3.2.2. Water tariffs

Municipalities either purchase untreated raw water from DHSWS, taken directly from dams, springs, rivers and boreholes, or purchase bulk water from bulk water providers, e.g. Water Boards, which is then treated to a potable standard. The CCT owns some dams and, together with other municipalities in the WCWSS, also purchases raw water from DHSWS-owned dams and then treats the water in municipal-owned facilities.

The 2019/20 consumptive raw water charges (which include water management and infrastructure charges, and a water research fund levy) ranged between R0.04/kl and R22.88/kl nationally (DHSWS 2021)<sup>22</sup>. The 2020/21 bulk water tariffs averaged R9.80/kl, varying from R4.57/kl to R19.81/kl. The tariff depends on various factors, such as the availability of water, water quality, distance of distribution, and cost of infrastructure finance (DWS 2017a). The water sector does not have a distinct or independent regulator, which means that in the absence of an economic panel of experts to assess water costing and pricing, water boards can propose different tariffs for the same service within their jurisdiction. Municipalities distribute potable water to their consumers and charge a retail tariff. Revenue from water sales accounts for around 13% of municipal operating revenue (DWS 2017a).

Each municipality is responsible for setting its own tariffs, in terms of which it may differentiate between users. Most municipalities have separate tariffs for residential, commercial, and industrial water users, and provide a free basic allowance of water to indigent households. In South Africa, around 59% of households do not pay for water and sanitation services (in 2018), because they are either unable (indigent) or unwilling to do so (StatsSA 2019a).

Municipalities generally use a rising block (stepped) tariff structure, where R/kl tariffs increase as usage increases. However, in some cases a fixed volumetric rate (R/kl) applies, e.g. CCT and eThekweni's water and sanitation tariffs for commercial and industrial water users. In addition, the tariffs are linked to restriction levels, with tariffs increasing as restrictions increase.

Water ([Table 4](#)) and sanitation ([Table 5](#)) tariffs (excluding surcharges) and tariff structures vary between metros<sup>23</sup> and municipalities, and impacts on the business case for water technologies. [Figure 11](#) and [Figure 12](#) indicate the differences in monthly tariffs for a household consuming 15 kl, and for a commercial or industrial business consuming 20 kl, respectively, across metros and their likely impact on a business case. For example, investing in water technologies that reduce demand for a commercial or industrial business situated in Johannesburg and eThekweni has a good business case due to the higher water tariffs. On the other hand, investing in water reuse will have a good business case for a similar commercial or industrial business situated in Johannesburg and Cape Town due to higher sanitation tariffs in these metros.

<sup>22</sup> <http://www.dwa.gov.za/Projects/WARMS/Revenue/APPROVED%20DOMESTIC%20AND%20INDUSTRY%20RAW%20%20WATER%20TARIFF%202020-21%20FY.pdf>

<sup>23</sup> Minimum restriction level tariffs. Residential tariffs are for non-indigent, single dwelling houses (post-paid) at minimum (synonymous with “no restriction level”; we have used this convention since the exact terminology varies between municipalities). All fixed charges assume 20 mm connections. The sanitation charges exclude any industrial effluent surcharges if effluent exceeds discharge limits. Sanitation charges apply to an assumed sewage discharge volume that is linked to water consumption, which has already been pre-applied to relate costs directly to water consumed, as shown in [Table 4](#).

**Table 4:** Water tariffs (ex VAT) for selected metros (minimum restrictions) for FY2020/21

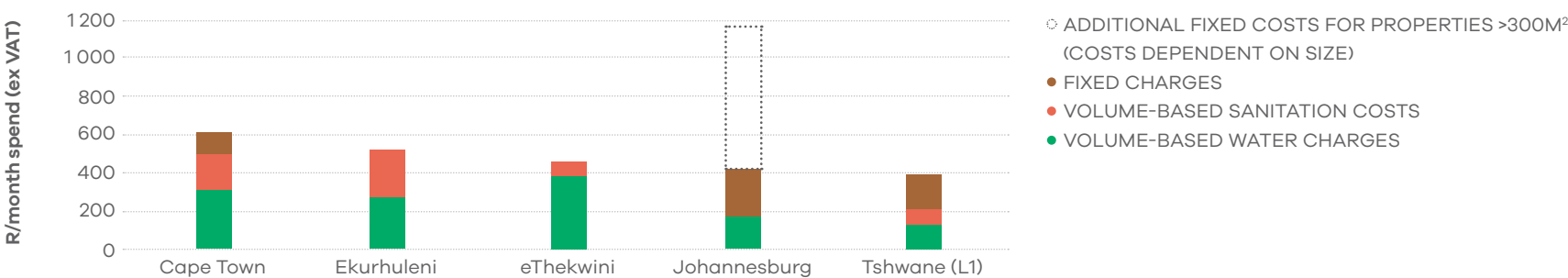
Cape Town			eThekweni			Tshwane (L1) <sup>24</sup>		Ekurhuleni		Johannesburg	
	Step	Monthly use (kl)	R/kl	Monthly use (kl)	R/kl	Monthly use (kl)	R/kl	Monthly use (kl)	R/kl	Monthly use (kl)	R/kl
Residential		Fixed monthly	104.50	Fixed monthly	N/A	Fixed monthly	120.00	Fixed monthly	N/A	Fixed monthly	26.52
	1	0-6	15.10	0-6	23.42	0-9	0.00	0-6	13.50	0-6	0.00
	2	6-10.5	20.75	6-25	27.70	10-18	21.27	7-15	22.24	6-10	18.99
	3	10.5-35	28.20	25-30	36.90	19-30	28.79	16-30	27.24	10-15	19.82
	4	>35	52.04	30-45	56.91	31-42	33.14	31-45	33.90	15-20	27.79
	5	–	–	>45	62.58	43-60	35.46	>45	41.80	20-30	38.40
	6	–	–	–	–	>60	37.97	–	–	30-40	42.00
	7	–	–	–	–	–	–	–	–	40-50	52.99
	8	–	–	–	–	–	–	–	–	>50	56.79
Commercial & Industrial		Fixed monthly	104.50	Fixed monthly	291.84	Fixed monthly	N/A	Fixed monthly	N/A	Fixed monthly	234.07
	1	Not stepped	27.04	Not stepped	36.52	0-10 000	26.13	0-5 000	29.17	0-200	44.97
	2					10 001-100 000	24.80	5 001-25 000	29.64	>200	47.44
	3					>100 000	23.12	>25 000	30.92	–	–

<sup>24</sup> City of Tshwane's lowest published water tariff (minimum restrictions) is for Level 1 water restrictions. The water restrictions did not impact the sanitation tariffs.

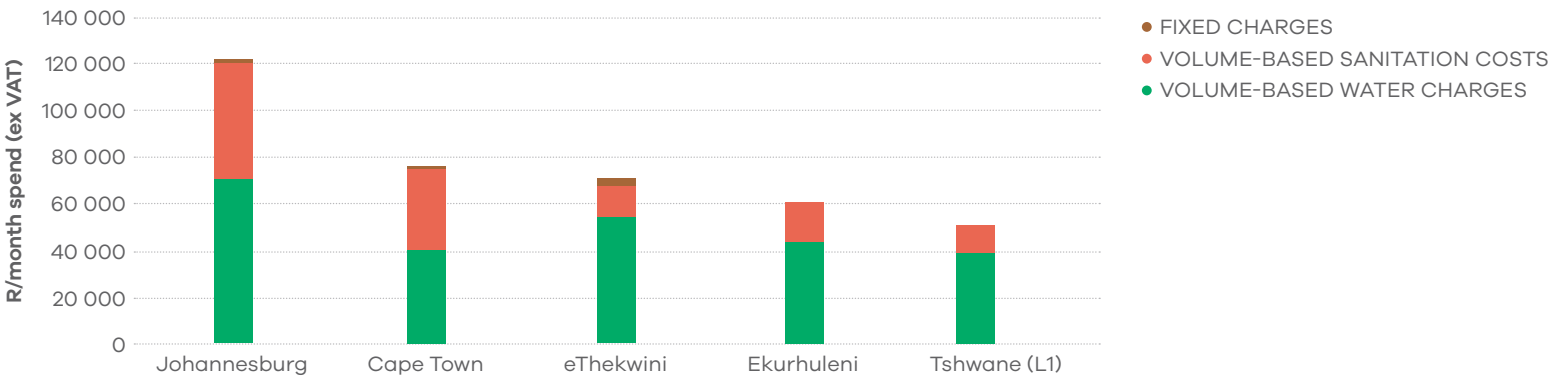
**Table 5:** Sanitation tariffs (ex VAT) for selected metros (no restrictions) for FY2020/21

		Cape Town		eThekweni		Tshwane		Ekurhuleni		Johannesburg	
	Step	Monthly water use (kl)	R/kl of water used	Monthly water use (kl)	R/kl of water used	Monthly water use (kl)	R/kl of water used	Monthly water use (kl)	R/kl of water used	Property size (m <sup>2</sup> )	R (Res) or R/kl (C&I)
Residential		Fixed monthly	N/A	Fixed monthly	N/A	Fixed monthly	70.00	Fixed monthly	N/A	Fixed monthly	N/A
	1	0-6	9.29	0-6	3.71	0-9	0.00	0-6	18.08	0-300	228.06
	2	6-10.5	12.77	6-25	4.89	10-12	13.69	7-15	14.46	301-1 000	443.96
	3	10.5-35	17.93	25-30	9.34	13-18	11.41	16-30	6.15	1 001-2 000	671.63
	4	35-50	28.20	30-45	12.58	19-24	9.13	31-45	5.65	>2 000	967.71
	5	–	–	>45	12.95	25-30	7.91	>45	3.85	–	–
	6	–	–	–	–	31-42	1.52	–	–	–	–
	7	–	–	–	–	>42	0.15	–	–	–	–
Commercial & Industrial		Fixed monthly	N/A	Fixed monthly	188.12	Fixed monthly	N/A	Fixed monthly	N/A	Fixed monthly	N/A
	1	Not stepped	23.09	Not stepped	8.89	Not stepped	7.79	0-5 000	11.34	Not stepped	33.62
	2							5 001-25 000	6.05		
	3							>25 000	3.93		

**Figure 11:** Comparison of monthly household water costs (2020/21) for 15 kl/month across various metros (GreenCape analysis)<sup>25</sup>



**Figure 12:** Comparison of monthly costs (2020/21) for commercial and industrial businesses for 1 500 kl/month (50 mm connection) across various metros (GreenCape analysis)<sup>26</sup>



<sup>25</sup> The figure reflects the non-indigent, single household, post-paid water and sanitation charges (including any 20 mm connection fixed charges) at minimum or no restrictions for property values > R750 000 (incl. VAT).

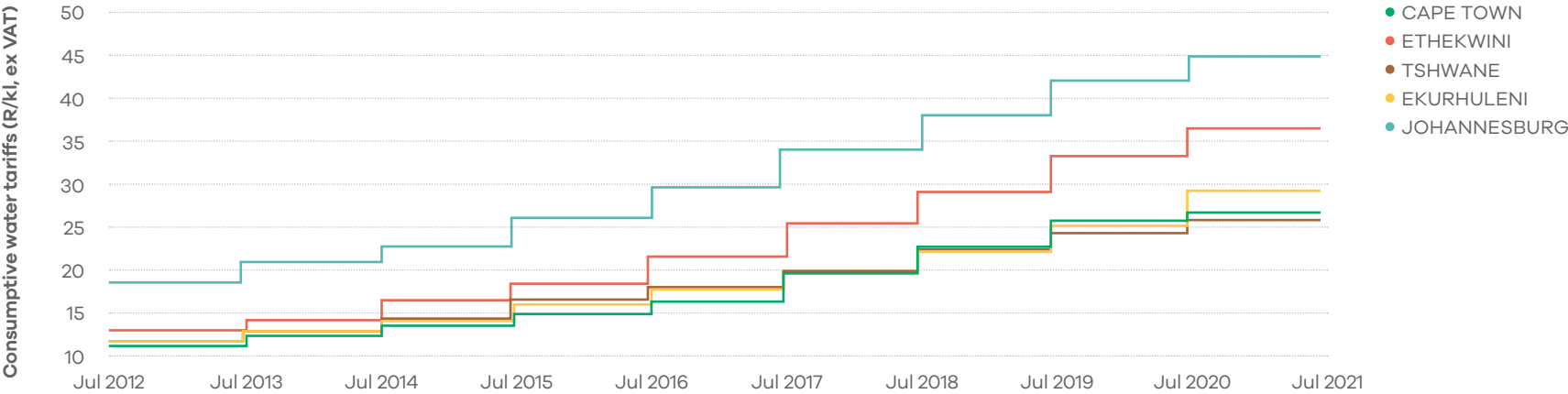
<sup>26</sup> The figure reflects the water and sanitation charges (including any 50 mm connection fixed charges) at minimum or no restrictions.

The National Water and Sanitation Masterplan developed by the former Department of Water and Sanitation (now DHSWS), states that water and sanitation tariffs should be determined on the principle of cost recovery, although historically this has not been the case. As the raw water quality and quantities decline, the cost of more expensive alternative water sources to increase supply will lead to increased tariffs.

Tariffs have been increasing across selected metros at an annual average of approximately 11.8% (Figure 13), although future tariff increases are expected to be higher. The most recent 2020 average tariff increase for bulk water supply to these major metros was 8.4%. The DHSWS had proposed raw water price increases of at least 16.5%, effective from March 2020 (The South African 2019).

However, the increase in bulk water tariffs proposed by each water board was rejected by DHSWS, partly due to the COVID-19 pandemic, except in the case of Rand Water that was granted a 6.5% increase (PMG 2020).

**Figure 13:** Commercial and industrial water tariffs when minimum restrictions (no restrictions) are in place, for selected metros 2012-2021 (GreenCape analysis)<sup>27</sup>



<sup>27</sup> The figure reflects the consumptive water tariffs only (excluding any fixed charges or sanitation charges) at minimum or no restrictions. The tariffs are for the first tariff step only.

### 3.2.3. Alternative water use and installation of sub-meters

The CCT Water Amendment By-Law, 2018, requires that all new developments (C&I or residential) install water saving measures or alternative water systems, as well as sub-metering of multi-unit properties (by October 2020 for existing properties). The By-Law stipulates that only municipal potable water can be used for domestic purposes (drinking, ablution and culinary, excluding toilets and urinals). However, businesses and residential developments can use alternative water for domestic purposes if they enter into a contract with CCT to become a water services intermediary (WSI). The contract outlines various conditions that must be adhered to, including water quality monitoring and compliance.

In order to address the absence of national standards for the installation of alternative water systems (such as greywater, rainwater, groundwater, and treated effluent), CCT has developed summary installation guidelines.

The guidelines outline the required measures to protect the municipal supply and the water users within the property, in line with CCT's Water Amendment By-Law, 2018. Approvals are required from the CCT for all plumbing installations for alternative water systems, and a certificate of compliance is required once the installation has been completed. Furthermore, the By-Law also provides for the compulsory installation and maintenance of one of the following on each pipe branch by October 2020: an isolating valve, a water management device, prepayment meter, or private sub-meter. The extension of this deadline to compensate for the impact of COVID-19 has not been communicated.

### 3.3. Municipal procurement

Municipal procurement is regulated by the Municipal Finance Management Act no. 56 of 2003 (MFMA) and its regulations, including the Municipal Supply Chain Management Regulations (2005).

These regulations specify the minimum requirements, but municipalities are allowed to apply stricter standards. The MFMA outlines the competitive procurement processes, and unsolicited bids are not encouraged. National Treasury also sets further requirements such as local content under designated sectors through the Preferential Procurement Policy Framework Act 5 of 2000.

As stipulated by National Treasury (2017), for projects worth more than R30 000, but less than R50 million (incl. VAT), the price contributes 80 points of the total score and the Broad-based Black Economic Empowerment (B-BBEE) status contributes 20 points. For projects above R50 million, the price contributes 90 points and B-BBEE status 10 points.

Municipalities can also specify prequalification criteria to limit the competition to certain groups. These groups include companies with higher B-BBEE scores, exempted micro enterprises (EMEs), and qualifying small business enterprises (QSEs).

Municipalities are also allowed to issue directives on emergency procurement procedures when a state of disaster has been declared under Section 55(2) of the Disaster Management Act (57 of 2002). For example, to facilitate emergency procurement of water and sanitation services to prevent the spread of COVID-19, DHSWS established the National Disaster Water Command Centre led by Rand Water, and permitted direct engagement with manufacturers to provide water tanks, ablution blocks, sanitation packs, and related water services to communities without access to these services.

The procurement of services is permitted for a period of up to three years. If a contract is anticipated to extend beyond this three-year limitation, a municipal department must motivate for such an extension to be granted by its municipal council in accordance with the MFMA (Section 33). The process involves inviting comment from national and provincial treasury, relevant national and provincial departments, and the public.

For the provision of services by an external service provider, the MSA (Sections 77 & 78) requires a feasibility study to justify the advantage of external over internal service provision. In addition, for public-private partnerships (PPPs), the MFMA (Section 120) requires a bankable feasibility study.

### 3.3.1. City of Cape Town procurement

Companies wishing to do business with CCT must first register with the national Central Supplier Database (CSD)<sup>28</sup>, then with the City's supplier database via its eServices portal<sup>29</sup>, and then register on the City's procurement portal and/or tender portal<sup>30</sup>.

The CCT publishes Requests for Quotations (RFQs) on its portal for goods and services worth less than R200 000, while those exceeding R200 000 (VAT included) require a formal bidding (tender) process. Tenders are also advertised in local newspapers and on the national tender portal. The bidding process for tenders valued at more than R10 million is more extensive and requires additional documentation.

**VISIT THE NATIONAL  
TENDER PORTAL**

For more information on the procurement processes, please visit the CCT website<sup>31</sup>. The list of tenders received by the City, and their prices, can be viewed below.

**TENDER LIST  
AND PRICES**

### 3.4. New Technology Platforms

The South African Local Government Association (SALGA) in partnership with the Water Research Commission (WRC) has launched the Technology and Innovation Forum (TIF).

The TIF will provide a collaborative platform for municipal partners to share their innovation needs and mobilise partnerships to jointly conceptualise programmes, projects, and funding.

The CCT has a New Technology Platform to gain an understanding of innovative water technologies in the market. It gives companies the opportunity to present their products and services to government in a fair manner. For information on how to submit information to the committee, click the button below.

**CCT NEW TECHNOLOGY  
PLATFORM**

<sup>28</sup> Register for the CSD at <https://secure.csd.gov.za/>

<sup>29</sup> Steps to register as a CCT supplier are available at <https://www.capetown.gov.za/City-Connect/Register/Business-and-trade/Register-as-a-supplier>

<sup>30</sup> Register for the CCT procurement/tender portal at <https://web1.capetown.gov.za/web1/ProcurementPortal/Account/Register>

<sup>31</sup> The City's Supply Chain Management page is available at [http://www.capetown.gov.za/Departments/Supply%20Chain%20Management%20\(SCM\)%20Department](http://www.capetown.gov.za/Departments/Supply%20Chain%20Management%20(SCM)%20Department)



Mac Mac Falls,  
Mpumalanga Province.  
©Pxhere



# **EMERGING OPPORTUNITIES, DRIVERS AND BARRIERS**

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The pursuit of water security and sustainable sanitation in South Africa presents substantial opportunities for investors and businesses in the urban water sector.

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Demonstration Water Reuse  
Plant at Zandvliet Wastewater  
Treatment Works.  
©City of Cape Town

In this section, business and investment opportunities, together with associated drivers and risks, are discussed in relation to the key opportunities in the largest urban water market segments in South Africa, namely the municipal water and wastewater services.

In the **municipal** water market, **reducing non-revenue water** is an important component in achieving water security and enhancing revenue collection. Within the municipal wastewater market, the key opportunities relate to **non-sewered sanitation systems** and the beneficiation or **alternative disposal of wastewater sludges**.

This presents a business opportunity for technology providers as municipalities can independently and/or through funding from financiers invest in these technologies. Readers of this report are advised to read the **2020 Water Market Intelligence Report** and the **Water Sector Procurement Industry Brief**

for broader context to the municipal market segment and value chain. The focus of the market information is on the Western Cape and South African metros but, where available, information for elsewhere in the country is provided.



Maintenance work at  
Zandvliet Wastewater  
Treatment Works.  
©Bruce Sutherland  
(City of Cape Town)

2020 WATER MARKET  
INTELLIGENCE REPORT

WATER SECTOR  
PROCUREMENT  
INDUSTRY BRIEF

**Table 6:** Summary of market opportunities

Opportunity	Key drivers	Barriers	Key market segments
<b>Non-revenue water reduction (NRW)</b> <b>Section 4.1</b>	<ul style="list-style-type: none"> <li>Potential savings (due to reduced water loss &amp; wastage, inaccurate metering and billing, etc.).</li> <li>Increasing water scarcity and droughts.</li> <li>Demonstrated short payback period.</li> <li>Increased project preparation support (DBSA and NT).</li> </ul>	<ul style="list-style-type: none"> <li>Lack of municipal technical capacity.</li> <li>Complex contracting and financing models.</li> <li>Lack of locally verified or demonstrated technologies.</li> <li>Acceptance by the public.</li> <li>Financial insolvency of municipalities.</li> </ul>	<ul style="list-style-type: none"> <li>15% reduction in NRW target nationally by 2030, supported by a seed investment of <b>-R676 mil</b> by DHSWS to realise <b>-R7.3 bn</b> per year in savings in bulk water costs nationally (<b>-R740 mil</b> in WC).</li> <li><b>-R5.5 mil</b> in subsidy for smart metering in WC schools.</li> <li><b>-R1.2 bn</b> in smart meter installation in CCT over 8 years.</li> </ul>
<b>Non-sewered sanitation systems (NSSS)</b> <b>Section 4.2</b>	<ul style="list-style-type: none"> <li>Covid-19 pandemic reemphasised the need for universal access to sanitation.</li> <li>Housing provision pressure.</li> <li>Need for rapid implementation options.</li> <li>Constraints on development due to lack of bulk infrastructure.</li> <li>SDGs/NDP strategies and government initiatives aimed at providing universal access to sanitation.</li> <li>Some informal settlements are on private land, making it difficult to install permanent infrastructure.</li> <li>Increase in water and sanitation service delivery protests.</li> <li>Lack of availability of potable water to flush toilets and use for water borne sanitation.</li> </ul>	<ul style="list-style-type: none"> <li>Policies, bylaws &amp; regulations that make it onerous to install NSSS.</li> <li>Available grant funding for providing access to sanitation is insufficient.</li> <li>Financial insolvency of municipalities.</li> <li>Public acceptance.</li> <li>Negative perceptions about cost and maintenance requirements.</li> <li>Footprint size of NSSS as some informal settlements are densely populated.</li> <li>Lack of locally proven technologies.</li> <li>Lack of appropriate financing models to implement NSSS.</li> </ul>	<ul style="list-style-type: none"> <li><b>-R3.4 bn</b> has been allocated to improve sanitation in schools over the next 2 years.</li> <li>Estimated total capital investment potential of <b>-R41.4 bn</b> in NSSS (<b>-2.44 bn in WC</b>) towards achieving universal access to safe sanitation based on 2018 GHS.</li> <li><b>-R4.7 bn</b> worth of potential NSSS projects in the metros (<b>-2.0 bn in CCT</b>) to replace chemical, bucket toilets, and provide sanitation to households without access.</li> </ul>
<b>Wastewater sludge beneficiation</b> <b>Section 4.3</b>	<ul style="list-style-type: none"> <li>Increasing landfill disposal fees.</li> <li>Transportation costs.</li> <li>SDGs (7, 11 and 12).<sup>32</sup></li> <li>Nitrogen based fertiliser imports threatened by Covid-19 supply chain risks.</li> <li>Imminent organic waste to landfill reduction plan and existing liquid waste to landfill ban.</li> </ul>	<ul style="list-style-type: none"> <li>Current state of policies &amp; regulations (also a potential driver).</li> <li>Lack of capital.</li> <li>Public and industry perception.</li> <li>Financial insolvency of municipalities.</li> <li>Producer-beneficiary infrastructure gap (potential driver).</li> <li>Lack of locally verified technologies.</li> </ul>	<ul style="list-style-type: none"> <li>Opportunities to transport and beneficiate sludge to the value of <b>-R330 mil</b> per year across all metros, excluding Tshwane (<b>-R86 mil</b> in WC).</li> </ul>

<sup>32</sup> Sustainable Development Goals for Affordable and Clean Energy (7), Sustainable Cities and Communities (11), and Responsible Consumption and Production (12)



As outlined in [Section 2](#), SA is a water-scarce country characterised by aging W&S infrastructure, a funding gap of ~R33 billion per annum, and higher water consumption and losses (~233 l/c/d and ~41% NRW, respectively) than world averages. SA is highly dependent on water borne sanitation (~65% of households) with ~2.8 million households (20% of households) lacking access to safe sanitation. This presents investment and business opportunities in innovative technologies to tackle NRW and non-sewered sanitation systems (NSSS). Furthermore, the quest for sustainability and the plan to divert 100% organic waste from landfill disposal for the WC, as outlined in [Section 3](#), presents a business and investment opportunity in wastewater sludge beneficiation technologies. These business and investment opportunities are supported by the NW&SMP, NDP, and SDGs.

#### 4.1. Non-revenue water

Non-revenue water (NRW) is the volume of water supplied by a water services provider (water utility) for which it receives no income due to various factors, including water losses, metering errors, billing errors, theft, and unbilled authorised consumption.

South African municipalities cumulatively use around 5 billion kl per year, of which 39.3% is NRW (NW&SMP 2019), representing an estimated R44 billion in lost revenue each year<sup>33</sup>. [Table 7](#) shows the provincial NRW and water use per capita.

<sup>33</sup> Based on an average 2020/21 metro tariff of R22.39/kl

**Table 7:** Overview of non-revenue water in South African provinces (DWS 2019a)

Province	Population	System Input Volume (million m <sup>3</sup> /annum) <sup>34</sup>	% NRW	NRW (million m <sup>3</sup> / annum)	Per capita consumption (l/c/d)
Northern Cape (NC)	1 263 875	85.80	43.5	37.32	186
Free State (FS)	2 887 465	220.27	42.3	93.17	209
Mpumalanga (MP)	4 592 187	343.61	46.2	158.75	205
North West (NW)	4 027 160	349.84	41.2	144.13	238
Limpopo (LP)	5 982 584	397.42	50.3	199.90	182
Eastern Cape (EC)	6 712 276	490.00	46.3	226.87	200
Western Cape (WC)	6 844 272	502.13	20.2	101.43	201
KwaZulu-Natal (KZN)	11 289 086	927.12	45.0	417.20	225
Gauteng (GP)	15 176 115	1 689.48	34.7	586.25	305
<b>National</b>	<b>58 775 020</b>	<b>4 998.52</b>	<b>39.3</b>	<b>1 965.04</b>	<b>233</b>

<sup>34</sup> Based on population (2019 Stats SA) and % NRW (NW&SMP 2019)

The total annual NRW across the eight metros is 779 million kl (35% of the system input volume). Four of these metros have NRW of more than 35%, which is a poor

performance compared with the international benchmark of 10 to 20% NRW (NW&SMP 2019). **Table 8** shows the NRW breakdown per metro.

**Table 8:** Overview of non-revenue water in South African metros (metro annual reports 2018/19)

Metro	2018/19 System Input Volume (million m³/annum)	% NRW	2018/19 NRW (million m³/annum)
Buffalo City	64.12	46.11	29.57
Nelson Mandela Bay	82.45	43.90	36.20
Mangaung	86.57	34.00	29.43
Cape Town	329.00	31.50	103.64
eThekweni	342.88	36.80	126.18
Ekurhuleni	355.14	32.80	116.49
Tshwane	377.16	29.81	112.43
Johannesburg	584.00	38.60	225.42
Total	2221.33	35.09	779.35

Water conservation and water demand management (WC/WDM) interventions can reduce NRW significantly. **Table 9** presents an extensive range of options for WC/WDM interventions.

The national water and sanitation master plan (NW&SMP) places emphasis on the interventions in bold in **Table 9**, namely programmes to reduce water leakage by proactively looking for and fixing leaks in distribution networks, and improving the efficiency of water use by domestic and commercial water users.



**Table 9:** Options to reduce non-revenue water

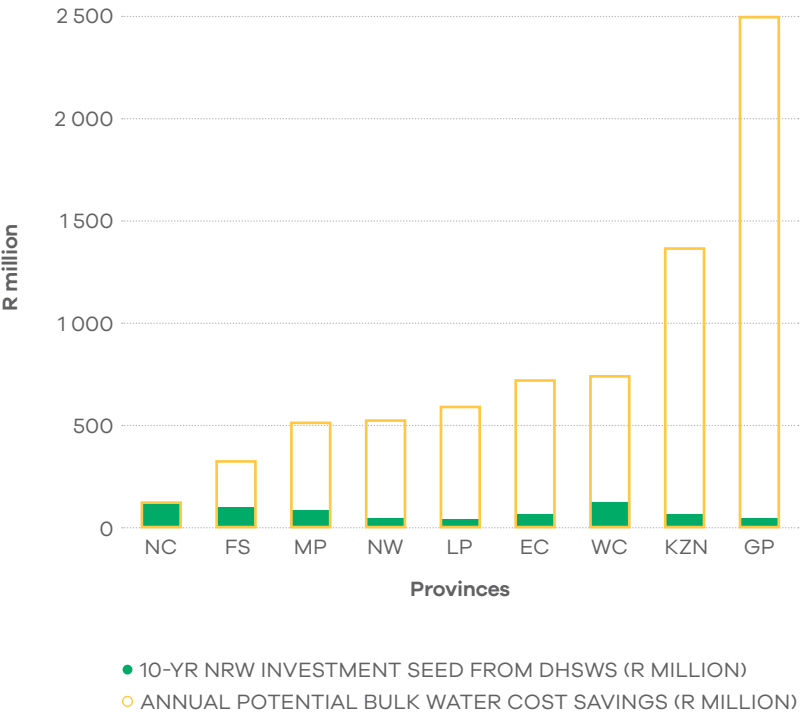
Category	Water conservation and demand management (WC/WDM) intervention
Monitoring and data	Smart or remote meters, asset management, database polishing, water balance analysis, real-time system monitoring, improved billing and revenue collection systems
Physical loss reduction	Leak detection, early warning major leak prevention, <b>active leak repair systems</b> , pressure reduction schemes, night flow pressure reduction, water efficient devices, removal of unlawful connections
Educating users	Non-billed authorised consumption reduction, customer leak reporting system, water restrictions, <b>efficient consumption</b> , informative billing, education, and awareness programmes

The savings brought about by these interventions enable various benefits, including increased revenue, deferred capital expenditure, lower energy costs, and reduced bulk water spending. Customer service is also improved through fewer service interruptions, more continuous supply, higher pressures, and cleaner water (PPIAF & WBG 2016).

The NWSMP targets a NRW of 26% (a 15% reduction from the current 39.3% average) nationally by 2030. It has committed a total investment of R676 million, distributed equally between WSAs, to assist with achieving this target, with further private and municipal investment in NRW projects. The R676 million is made up of a R3 million up-front component and a R1 million maintenance follow-up component for each of the 169 WSAs.

**Figure 14** indicates the provincial distribution of this seed investment, which is linked to the number of WSAs per province, and the potential bulk water cost savings attainable by achieving this target.<sup>35</sup> There are opportunities for private sector participation in NRW reduction programmes in municipalities. This will include PPP (Public-Private Partnerships) and PBC (Performance Based Contracts) amongst other financial models which will be subject to municipal procurement. The national cost savings potential from reducing NRW by 15% is estimated at R7.4 billion per year (GreenCape analysis 2021<sup>36</sup>). The MFMA 2018/19 Consolidated General Report on the local government audit outcomes<sup>37</sup> confirms this market size with a reported R6.56 billion in lost municipal revenue from disclosed water losses. The market lies predominantly in the metros and the large cities, which represent 84% of this national savings potential (DWS & SWPN 2015).

**Figure 14:** Provincial distribution of DHSWS 10-year investment seed (NW&SMP 2019) and the annual potential bulk water cost savings (GreenCape analysis 2021)



<sup>35</sup> Calculated assuming a 15% reduction in NRW by WSAs

<sup>36</sup> Based on an average 2020/21 water board bulk tariff of R9.80/kl. Assumed NRW reduction achieved through water loss reduction.

<sup>37</sup> <https://www.agsa.co.za/Portals/0/Reports/MFMA/201819/GR/MFMA%20GR%202018-19%20Final%20View.pdf>

A fundamental part of a NRW reduction project is to confirm the water balance of the distribution system(s), or of sub-sectors of the system, through flow and/or pressure monitoring. To support this fundamental requirement of monitoring, the NW&SMP has targeted a revitalisation of the No Drop programme, with monthly reporting expected from municipalities. To kick-start this regulatory compliance driver for NRW reduction, the NW&SMP estimates that a once-off investment in the monitoring system of R0.2 million per municipality, totalling R29 million nationally, will be required.

In addition, the following support plans for the NRW market are afoot in South Africa:

- DHSWS, CoGTA and DBSA are developing a national NRW reduction implementation support programme to ensure a standard and informed approach across municipalities<sup>38</sup>.

The programme is currently at pre-feasibility stage, but once approved, it is estimated at R35 billion to R50 billion (National Treasury, 2020).

- The mining sector has developed a guideline and calculator tool for the development and implementation of water conservation and water demand management<sup>39</sup> in line with the 10% water consumption reduction target set forth by the NW&SMP for the mining sector.
- The Western Cape Education Department (WCED) has announced a subsidy for smart metering at 350 schools to the value of R3 850 per installation and R200 monthly service fees (~R 5.5 million investment over five years)<sup>40</sup>.

- The CCT is in the process of procuring a service provider to design an eight-year transition programme to smart water metering (600 000 meters to be upgraded ~ R1.5 billion) and water balance monitoring across the city.

## 4.2. Non-sewered sanitation systems

The South African Constitution, National Water Act, Water Services Act, and the national W&S policy papers give the government the mandate to provide universal and equitable access to W&S (DWS 2019a). The NDP also acknowledges that effective and sustainable management of W&S services is essential for community health, development, cohesion, and continued economic activity. Meeting the 2030 SDG 6 and NDP targets relating to universal W&S provision will require investment towards rapid acceleration of service delivery.

However, the delivery of sustainable sanitation services in new property developments, low income and informal settlements is a growing challenge. This is mainly due to a rapid increase in urban populations, and rising poverty levels coupled with poor service delivery by distressed and dysfunctional municipalities (AGSA, 2020; DWS 2019a), amongst other barriers (see [Section 4.5](#)). Thus, the levels of access to sanitation are low, with **~20% (~2.8 million households, based on the 2018 household survey) having no access to safe and dignified sanitation**. The biggest market opportunity lies in providing sanitation to these households compared to the new property development market. This report will therefore focus on households without safe and dignified sanitation. The majority of these households are in the metros ([Figure 16](#)), as more than 66% of the population resides in urban areas (StatsSA, 2019).

<sup>38</sup> [https://www.engineeringnews.co.za/article/national-non-revenue-water-programme-in-development-2020-03-13/rep\\_id:4136](https://www.engineeringnews.co.za/article/national-non-revenue-water-programme-in-development-2020-03-13/rep_id:4136)

<sup>39</sup> <https://www.mineralscouncil.org.za/work/environment/environmental-resources/send/26-environmental-resources/591-guideline-for-the-development-and-implementation-of-water-conservation-and-water-demand-management-plans-for-the-mining-sector>

<sup>40</sup> <https://wcedonline.westerncape.gov.za/news/wced-offers-new-subsidy-support-water-sustainability>

Lack of access to safe sanitation and hygiene facilities has a devastating effect on the health, dignity, and prosperity of millions of people. Recently, a number of tragic deaths of school children falling into pit latrines have been reported<sup>41</sup>. Currently there are **3 632 schools** that require safe sanitation<sup>42</sup>. Most of the schools serviced with pit latrines are in the Eastern Cape, KwaZulu-Natal, and Limpopo.

In many cases it may be too costly or unfeasible to provide full-flush sewered sanitation to unserved areas such as informal settlements, rural areas, and in some cases new property developments. This may be due to a range of factors, including distance from a WWTW, overloaded WWTW, high settlement densities, and zoning constraints.

In this case, NSSS<sup>43</sup> can offer a viable solution that can be implemented relatively rapidly. NSSS are expected to become much more common in future for water scarce countries like South Africa (StatsSA, 2019). The SA Government, through the Department of Basic Education in partnership with the National Education Collaboration Trust (NECT) and Nelson Mandela Foundation, established a Sanitation Appropriate for Education (SAFE) initiative<sup>44</sup>. The SAFE initiative seeks to raise funds to provide safe sanitation facilities in all schools. It has been estimated that an investment of **~R10 billion** is required to ensure safe sanitation in schools by 2022.

In the 2020 budget review, the government allocated **~R2.8 bn** over the medium term towards the provision of appropriate sanitation facilities in schools (National Treasury, 2020).

Furthermore, based on the 2018 household survey, a total capital investment potential of **~R41.4 bn** (Figure 15) in NSSS is required to ensure access to improved/adequate<sup>45</sup> sanitation in all households (GreenCape analysis). In the metros, a capital investment potential of **~ R4.7 bn** (Figure 16, based on the 2018 household survey) is required to replace bucket toilets<sup>46</sup> and provide sanitation mainly to households in the informal settlements that do not have access to sanitation.

An initial amount of **~R8.1 bn** over the medium term (R3.9 bn and R4.2 bn for 2021/22 and 2022/23, respectively) has been set aside under the Informal Settlements Upgrading Partnership Grant (ISUPG) for the upgrade of urban informal settlements in the eight South African metros, including provision of safe sanitation (National Treasury, 2020). Additionally, a budget of **R7.2 bn** (out of ~R14.7 bn) in 2020/21 has been allocated under the Municipal Infrastructure Grant (MIG) to provide adequate<sup>47</sup> W&S services in non-metropolitan municipalities (National Treasury, 2020).

<sup>41</sup> <https://infrastructurenews.co.za/2020/11/23/unilever-on-a-drive-to-eradicate-pit-toilets-in-schools/>

<sup>42</sup> <https://www.timeslive.co.za/news/south-africa/2020-03-03-only-266-of-3898-schools-have-benefitted-from-ramaphosas-sanitation-campaign/>

<sup>43</sup> System that is not connected to a networked sewer, and collects, conveys, and fully treats the specific *input* to allow for safe reuse or disposal of the generated solid *output* and/or *effluent*. See report on the [sanitation economy for the different sanitation technologies](#).

<sup>44</sup> <https://www.education.gov.za/Programmes/SAFE.aspx>

<sup>45</sup> These facilities are defined as flush toilet (connected to municipal sewerage or septic tank), and pit latrine with ventilation pipe (StatsSA 2019).

<sup>46</sup> Bucket toilets refer to buckets emptied by municipalities (including portable flush toilets) and those emptied by households (StatsSA, 2019).

<sup>47</sup> Adequate access to W&S is defined by National Treasury as having piped water either inside the dwelling, in the yard or within 200 metres, and having a flush toilet, chemical toilet, pit toilet with ventilation or ecological toilet.

**Figure 15:** Estimated total capital investment potential<sup>48</sup> for non-sewered sanitation<sup>49</sup> by province if providing first-time access to sanitation, replacing unventilated pit latrines, bucket, and chemical toilets (GreenCape analysis based on the 2018 general household survey data, StatsSA 2019a)



<sup>48</sup> The sanitation backlog will not be entirely solved by investing in NSSS, and the realisable capital investment in NSSS will definitely be lower; hence reference to total capital investment potential which assumes 100% installation of NSSS to solve the sanitation backlog.

<sup>49</sup> These are systems that work with flush and dry toilets (ecological, composting and urine-diverting). The quoted capital investment excludes the top structure (building, sit bowl, and/or cistern). This is assuming that (i) unventilated pit latrines are replaced with dry toilets, while bucket and chemical toilets are replaced with low flush NSSS that incorporate water reuse, (ii) water consumption is 150 l/c/d, and (iii) about three to four people per household depending on the province ([StatsSA 2016](#)).

**Figure 16:** Estimated total capital investment potential for non-sewered sanitation<sup>50</sup> in the metros if providing first-time access to sanitation, replacing bucket toilets (based on the 2018 general household survey data, StatsSA 2019a)



<sup>50</sup> These are systems that work with flush toilets only and the capital cost excludes the top structure. The capital cost is an average from reputable technologies already in the South African market.

### 4.3. Wastewater sludge beneficiation

The costs associated with managing wastewater sludge can represent 40 to 60% of total WWTW plant costs<sup>51</sup>, depending on the size of the plant and initial wastewater characteristics. Despite the potential for energy and resource recovery from wastewater sludge through, for example, biogas generation (see [section 4.2.2.2](#) in the [2020 Water MIR](#)), the residual sludge (digestate) still requires disposal.

Common forms of disposal, which include landfilling or agricultural applications, are becoming less and less viable as transport costs and landfilling fees increase<sup>52</sup> or, due to tighter regulations, drivers refusing organic material altogether<sup>53</sup>.

[Figure 17](#) shows the estimated total (waste activated and primary) municipal sludge production distribution across South Africa by province.

[Figure 18](#) shows this distribution for the Western Cape, where the market lies predominantly in the CCT. The sludge production and method of disposal per metro is given in [Figure 19](#).

<sup>51</sup> [https://www.tpomag.com/online\\_exclusives/2020/08/rising-cost-of-sludge-handling-and-disposal-neecessitates-a-smarter-approach\\_sc\\_001jj](https://www.tpomag.com/online_exclusives/2020/08/rising-cost-of-sludge-handling-and-disposal-neecessitates-a-smarter-approach_sc_001jj)

<sup>52</sup> The City of Cape Town's landfill disposal costs have increased at an average rate of 7% p.a. over the last 10 years to the 2020/21 rate of R706.61 (excl. VAT) per ton of sludge disposed. See Waste MIR 2021 section x.x.

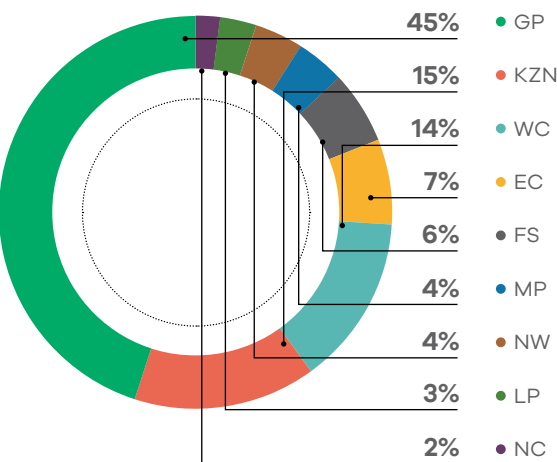
<sup>53</sup> See section 3.1.4 for details of the NEM: Waste Act.



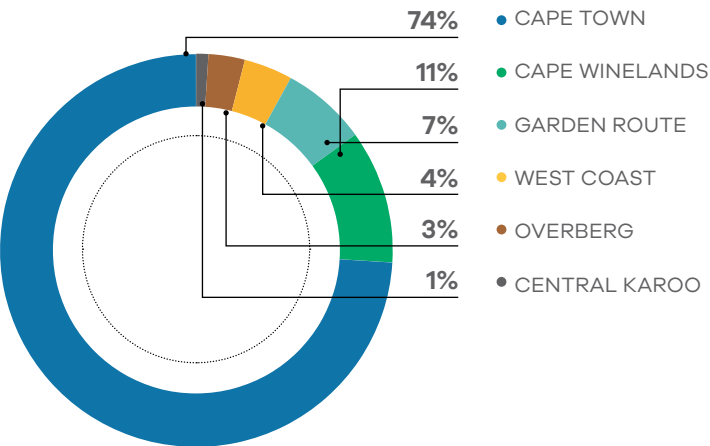
The costs associated with managing wastewater sludge can represent 40 to 60% of total WWTW plant costs.

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(City of Cape Town)

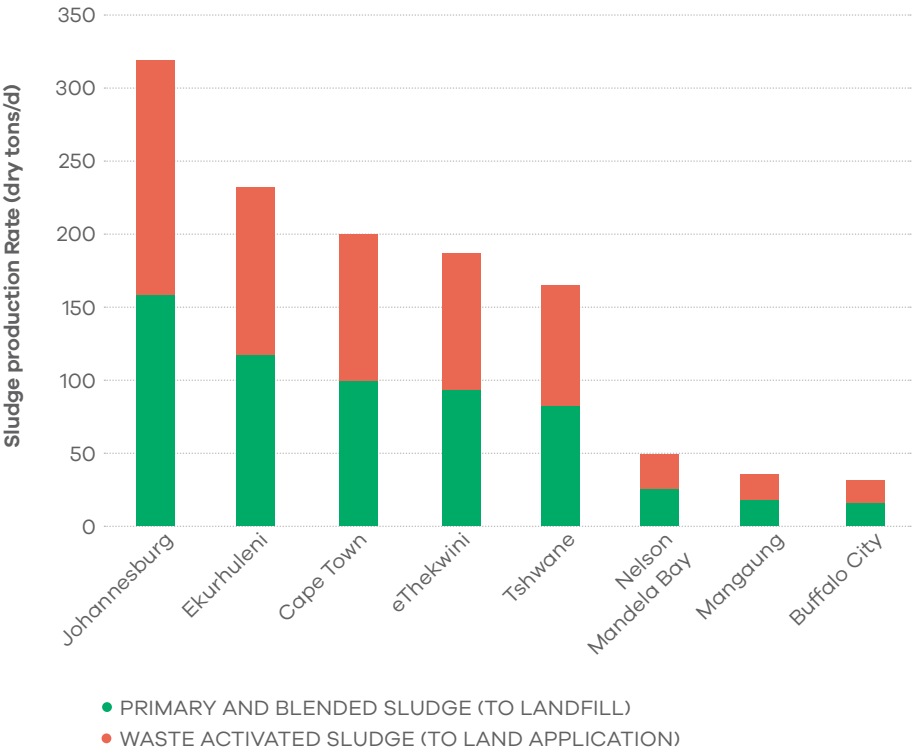
**Figure 17:** Total sludge (waste activated and primary) production distribution by province in dry tons per day (Green Drop 2013, GreenCape analysis 2021)



**Figure 18:** Total sludge (waste activated and primary) production distribution for the Western Cape in dry tons per day (Green Drop 2013, GreenCape analysis 2021)



**Figure 19:** Sludge production rates per metro by disposal method (GreenCape analysis, 2021)

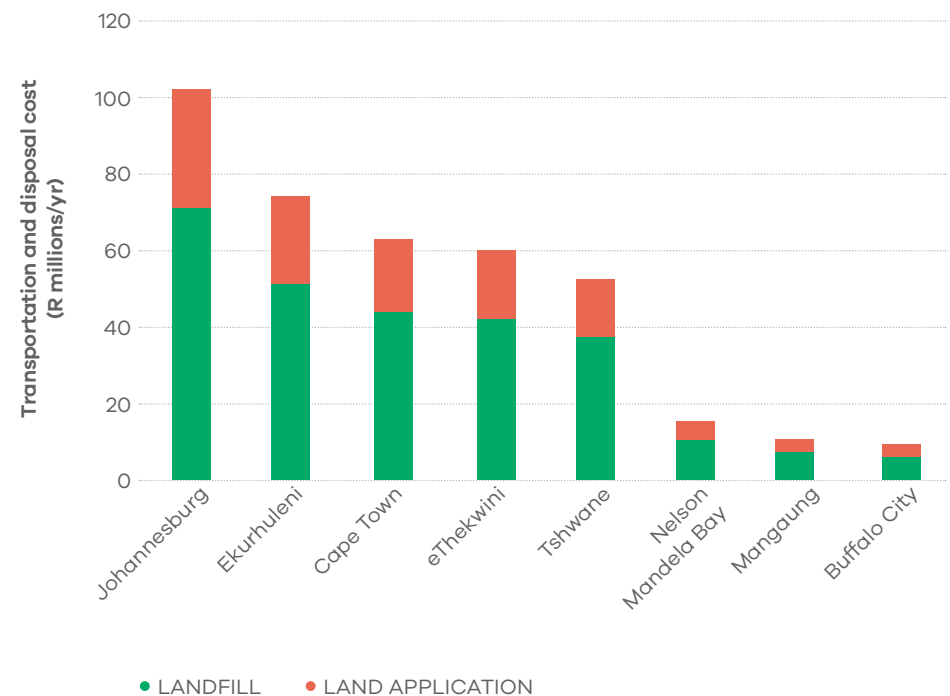


**Figure 20** shows the potential transportation and disposal costs for wastewater sludge per metro (GreenCape analysis 2021)<sup>54</sup>. The City of Tshwane has an agreement with a fertiliser manufacturer to process their sludge into compost for blending into fertiliser products. However, the other metros are facing transport and disposal costs of ~R330 million per year, with the ban on liquids to landfill and the plan to reduce solid organic waste to landfill. This presents opportunities to 1) divert sludge from disposal to the value of ~R 330 million per year, and 2) turn the sludge into a saleable product such as compost, fertiliser, bio-char, or fuel for further revenue.

This presents a good business case and opportunity for municipalities and technology/ service providers, respectively. Investors may invest in beneficiation projects to produce value added products from the 1 832 tons/day of dry sludge (primary and waste activated sludge). For sludge beneficiation to produce biogas and/or electricity, please see the **2020 Water MIR**. For other opportunities and landfill gate fees, see the **2021 Waste MIR** and **2021 Energy MIRs**.



**Figure 20:** Transportation and disposal costs of wastewater sludge per metro by disposal method (GreenCape analysis, 2021)



<sup>54</sup> Based on an average from the total annual disposal and transportation costs for CCT, taking the 2020/21 Vissershok Landfill gate fees for the special waste category into consideration for primary sludge.

Sludge disposal costs<sup>55</sup> can be minimised when the volume of sludge itself is decreased to reduce haulage costs and gate fees for landfill/beneficiation facilities. This will draw interest towards technologies that can achieve sludge volume reduction in a dependable, low maintenance and cost-effective way. Demand for facilities that offer an alternative to landfilling, through beneficiation of the sludge beyond its waste classification or into saleable products, is also rising.

#### 4.4. Drivers

There are a number of drivers that apply across all the presented opportunities in the municipal market. These will be presented first, followed by opportunity-specific drivers.

**Project preparation support** from national government to municipalities for water and wastewater infrastructure projects has increased.

The Project Preparation Facility will be led by the Development Bank of Southern Africa (DBSA), and supported by the Government Technical Advisory Centre (GTAC) and the Presidential Infrastructure Coordinating Commission's (PICC) Technical Project Management Unit. These units are expected to be operational by March 2021. They will prepare infrastructure projects by funding and facilitating technical and feasibility studies, increasing the pipeline of projects that can potentially be funded by direct foreign investments (DFIs) or private sector finance. The focus areas include water reuse, non-revenue water, and off-grid sanitation (Engineering News, 2020<sup>56</sup>). In the Western Cape, the Provincial Government is providing project preparation support for catalytic municipal infrastructure projects through the Sustainable Infrastructure Development and Financial Facility (SIDAFF) Programme.

The Programme, funded by the French Development Agency (AFD), aims to increase bankable municipalities' access to loan financing for infrastructure projects in order to address the decreasing availability of grant funding<sup>57</sup>.

**National, provincial, and municipal water strategies such as the NW&SMP's integrated development plans (IDPs)** have identified non-revenue water reduction, and waterless or off-grid sanitation systems as interventions to improve the country's water security and achieve universal access to W&S (**SDG 6**). Recently, the SA Government allocated more than R2.4 billion to upgrade informal settlements in the hope of curbing **COVID-19** through improved living conditions and better access to W&S. The 2020/21 water services infrastructure grant is ~R3.4 billion and is projected to increase every year by an average of 4.7% (National Treasury 2021).

Increasing urbanisation, that is expected to be exacerbated by the aftermath of Covid-19, is placing more pressure on cities to deliver affordable and reliable W&S services to larger numbers of poor households.

##### 4.4.1. Non-revenue water reduction

**Water security (future water supply deficits)** as outlined in **Section 2**, is a key driver of water-related projects in the municipal market. While some regions in South Africa have potential for new surface water projects, others like the Western Cape Water Supply System (WCWSS) have limited further surface water potential. Thus, managing the existing System Input Volume (SIV) and water demand through reducing NRW and using non-water borne sanitation can delay the need for alternative water augmentation schemes.

<sup>55</sup> Landfill gate fees per metro can be found in Section 2.4 of the 2021 Waste MIR.

<sup>56</sup> [https://www.engineeringnews.co.za/article/proactive-national-water-programme-on-the-cards-2020-10-16/rep\\_id:4136](https://www.engineeringnews.co.za/article/proactive-national-water-programme-on-the-cards-2020-10-16/rep_id:4136)

<sup>57</sup> Contact the WCG Department of Local Government or GreenCape for further information.

For NRW specific **project preparation support**, the DBSA has initiated the development of a national Non-Revenue Water Programme (NRWP) to drive NRW project preparation and development<sup>58</sup>, facilitate and mobilise funding, and monitor project implementation. The NRWP is looking at using a small portion of annual municipal grant funding as a guaranteed revenue to help municipalities attain project financing. The programme's trial project in Sol Plaatje Municipality involves the procurement of 18 bulk water meters, and data polishing and analysis to determine what can be done to reduce NRW.

Investments in reducing NRW have a **good business case** with **short payback periods**, typically three to twelve months. This is also good for technology providers seeking to enter into a service level agreement (SLA) with municipalities. Additionally, the implementation of NRW projects **delays the capital expenditure requirements** for water augmentation schemes.

#### 4.4.2. Non-sewered sanitation systems

According to StatsSA (2019a), **W&S related protest events** countrywide increased from 528 in 2017 to 737 events in 2018. Many of these service delivery protests, demanding the provision of water and dignified sanitation, gave rise to malicious damage to public and private infrastructure, placing significant strain on the already limited budget and infrastructure backlog. The DWS (now DHSWS) instituted the **Bucket Eradication Programme** (BEP) in September 2013 in settlements of the Eastern Cape, Free State, Northern Cape and North West provinces. Work in progress in the Free State and Northern Cape had a budget of R222 million and R96.9 million, respectively, in the 2019/20 financial year (DHSWS 2020). The completion of the programme is expected in 2021.

In rural and urban informal settlement settings, the main driver for NSSS is the **high costs or unfeasibility of connecting to the municipal sewer system**.

The provision of full-flush sewerage sanitation to all South Africans is unsustainable. The country will have to adopt alternative sanitation practices, such as low water to dry sanitation, which will reduce per capita water consumption.

**Rapid urban population growth in informal settlements** increases the demand for sanitation services. It limits the feasibility of the government to deliver the standard package of a flush toilet for each household. Furthermore, some informal settlements are **built on private land**, which makes it difficult for government to install permanent W&S infrastructure.

**Safety** is a major concern in informal settlements. South Africa has experienced a rise in femicide cases, higher than the world average. Communal sanitation facilities are often not used at night, particularly by women and children. There is usually a lack of lighting in and outside the facilities, and walking to the facility at night is a safety concern.

This compels residents to resort to using open defecation and/or plastic bags (Muanda, 2020). In addition to being a major inconvenience, such practices cause **negative environmental and health impacts**. Informal settlements are often built along water resources and within the regulatory 1:100-year flood line. Numerous informal settlements across the country experience flooding every year. This combination results in very polluted water courses. Hence there is a need for sustainable, safe, and hygienic sanitation that will protect both the people and the environment.

There is a **good business case** for large water users in reusing treated black water for flushing, particularly in the metros. Water reuse reduces the demand for potable water. Additionally, ecological toilets promote the beneficiation of urine and faecal matter to produce additional value added materials such as compost, bio-char, and briquettes.

<sup>58</sup> <http://www.treasury.gov.za/documents/National%20Budget/2020/review/FullBR.pdf>

This will **generate additional revenue** for municipalities, which can fund the provision of sanitation services and **create jobs**. According to UNDP<sup>59</sup>, every US\$1 invested in basic sanitation yields an average of US\$2.5 – US\$5 in **economic return**. There is also a **business opportunity** for technology/service providers to supply beneficiation technologies/services, while investors can finance sanitation and/or human waste beneficiation projects.

#### 4.4.3. Wastewater sludge beneficiation

The **rising operational costs** of transport and landfill gate fees are driving the market for alternative disposal and beneficiation options for sludge. The fertiliser market, one of the largest beneficiaries of wastewater sludge, is seeing an increase in demand for local products as the import of chemical fertilisers is under threat of rand-associated price hikes due to a poorly performing rand.

**Waste and wastewater discharge regulations**, such as the recent ban on landfilling of liquid waste, and the Western Cape plan to divert organic waste from landfill (50% diversion targeted by 2022 and 100% by 2027) are key drivers for resource recovery projects at wastewater treatment works (WWTWs). Many WWTWs currently dispose of wastewater sludge at landfills. They will now have to find alternative sustainable ways of sludge disposal.

The **2017 amendment to Schedule 2 of the Electricity Regulation Act** provides the policy and regulatory framework for municipalities to develop their own electricity generation, such as biogas and CHP projects. **Increasing costs of electricity** of ~27% over the next three years (Eskom 2019b) will enhance the financial benefits of investing in sludge beneficiation to produce electricity. For biogas opportunities in the municipal WWTWs, see the 2019 Water MIR<sup>60</sup>.

There is a **business case** in beneficiating wastewater sludge and faecal matter to produce fertiliser, compost, bio-char, and fuels for power generation. This will **reduce the landfill disposal costs**<sup>61</sup> and **generate additional revenue** for municipalities, which can fund the required upgrades in infrastructure. There is also a **business opportunity** for technology/service providers to supply beneficiation technologies/services, while investors can finance sludge beneficiation projects.

#### 4.5. Barriers and risks

Although investing in NRW reduction, NSSS, and sludge beneficiation projects makes financial sense to municipalities and investors, there are also significant barriers, as set out below.

A **lack of technical skills in municipalities** to develop bankable feasibility studies and structure appropriate contracts reduces the potential of accessing funding.

Investors and banks are looking for projects to fund, but cannot risk supporting a poorly investigated project. However, successful WC/WDM projects can be realised with the existing municipal capacity by starting with small, manageable steps, such as bidding on tenders for installing monitoring devices and collecting data to develop an understanding of the status quo. Although this is being tackled as outlined in **Section 4.4.1**, it is still a long way in overcoming this barrier.

Providing technical capacity is not the only barrier to **sourcing funding**. In areas where the majority of residents are indigent<sup>62</sup> and not able to pay for basic services, municipalities rely on the limited grant funding for infrastructure capital and maintenance. South Africa's 257 municipalities registered 3.5 million indigent households (~ 22%) in 2018, and 59% of households did not pay for their W&S services (up from 50,8% in 2009) (StatsSA 2018<sup>63</sup>).

<sup>59</sup> <https://www.undp.org/content/undp/en/home/blog/2020/for-a-lack-of-soap-and-clean-water--disease-flourishes.html>

<sup>60</sup> <https://www.greencape.co.za/assets/Uploads/WATER-MIR-2019-WEB-01-04-2019.pdf>

<sup>61</sup> The cost of disposal is linked to the moisture content of the sludge – the higher the more volume and mass needs to be disposed, therefore more haulage costs and gate fees.

<sup>62</sup> An indigent household is classified as a family earning a combined income of less than R3 200 per month.

<sup>63</sup> [http://www.statssa.gov.za/?p=11722#:~:text=In%202017%20most%20municipalities%20\(147,600%20per%20household%20per%20month.](http://www.statssa.gov.za/?p=11722#:~:text=In%202017%20most%20municipalities%20(147,600%20per%20household%20per%20month.)

The proportion of residents needing indigent support is projected to increase due to the deteriorated national economic climate associated with the COVID-19 pandemic and limiting of economic activities under the state of emergency lockdowns. Consumers owe municipalities more than ~R128 billion for water and sanitation services (AGSA 2020). The **lack of revenue collection** leaves municipalities highly dependent on limited grant funding and may lead to their insolvency. In 2019, metropolitan, district, and local municipalities had a working capital ratio<sup>64</sup> of 1.27, 1.01 and 0.76, respectively (StatsSA 2019b). This indicated that metropolitan municipalities are generally in a better position to settle short-term debt compared with district and local municipalities.

**Municipal finances.** Municipalities together with Water Boards currently owe the DHSWS ~R9.8 billion.

Municipalities alone owe Eskom and Water Boards more than R11 billion and R6.2 billion, respectively (Audit Report 2020). Municipal-scale projects are capital intensive, and an **inability to access funding** can be a major constraint. Although available grant funding for specific infrastructure projects is a driver, it is limited (**Section 2**). Only a small number of municipalities have the capacity and financial standing to access private sector financing or procure infrastructure projects using PPPs.

**Municipal procurement processes** (as outlined in **Section 3.3**) can be lengthy, tenders are often poorly specified, and unsolicited bids are typically not entertained. Furthermore, the procurement processes make it difficult for municipalities to trial and invest in new (unproven) technologies.

**Negative perception** regarding new technologies and services due to poorly developed business cases, or poorly managed prior projects is a major barrier.

Furthermore, in some cases engineering consultants are not prepared to carry the risk of recommending new technologies. Thus the designs provided to municipalities are based on tried and tested technologies, as they present less reputational risk for the consultant and less operational risk for the municipality.

**Lack of locally demonstrated technologies.** While new technologies in leak detection, sludge beneficiation and NSSS are emerging rapidly on the international market, South African municipalities are hesitant to install international technologies that have not been tested locally, or where suppliers do not have local offices that offer maintenance support. This directs support towards local products, but demonstrating technologies via pilots is still necessary. Pilot studies can be expensive and a high risk for technology providers, particularly during the early stages of business growth.

#### 4.5.1. Non-revenue water reduction

In municipal procurement processes, **performance-based contracts**<sup>65</sup>, which are recommended by the World Bank for NRW reduction projects, are relatively uncommon in the South African water sector. Municipalities are hesitant to enter into these types of contracts because they can be complex and difficult to arrange. However, eThekweni municipality is planning to enter into a performance-based contract to reduce NRW. This may give other municipalities confidence to explore this model.

**Budgets are allocated towards new infrastructure** through capital grant programmes, leaving insufficient funding focus on WC/WDM projects (NW&SMP).

<sup>64</sup> Working capital ratio is a measure of liquidity, meaning the business's (in this case municipality's) ability to meet its payment obligations as they fall due.

<sup>65</sup> For more information on performance-based contracts for NRW reduction projects, the World Bank Group provides support and resources. Visit: <https://ppiaf.org/documents/3531/download>

#### 4.5.2. Non-sewered sanitation systems

**Community acceptance**, as evidence has shown, is critical in the success of most technical interventions. Without adequate social engagement and education of communities, projects often fail. The social pillar must thus be driven to ensure community buy-in and support of technical programmes aimed at providing basic sanitation. Waterless systems do not receive the public vote in most communities, as they are viewed as similar to the bucket system. The use of flushing systems is perceived as the 'gold standard'. Community engagement is vital in order to ensure acceptance of the NSSS.

**Increased operational complexity**, as some NSSS require periodic de-sludging or frequent bio augmentation with bacteria. These activities are not complex, but require additional attention, and some technology suppliers offer this service as part of maintenance. This provides an opportunity for private sector involvement.

**The lack of skills and knowledge** by users, leading to **poor operation and/or maintenance** is also a barrier in the successful application of NSSS. Conventionally, NSSS employ biological treatment which is sensitive to variations in the characteristics of the faecal matter.

The addition of inorganic material may inhibit biological treatment. This gives some NSSS a bad reputation. Technologies that are robust and/or require less skilled labour may often be more appropriate. This may require that the technology provider offer training to the community on the operation and maintenance of the NSSS.

**High population density** leads to reduced space for the installation of NSSS. Some settlements may **lack the necessary utilities** such as water and electricity to support the installation of certain NSSS, particularly those that work with flush toilets. Furthermore, some technologies may contain accessories and parts that make them susceptible to **theft and vandalism**.

#### 4.5.3. Wastewater sludge beneficiation

**Public perception and safety concerns** regarding the use of wastewater sludge for energy production, agricultural application, and saleable products to the public represent one of the major barriers to sludge beneficiation projects. Furthermore, the poor state of many WWTWs does not evoke trust in municipalities to operate existing services effectively. Contaminants of emerging concern (CECs), such as endocrine disruptors, pharmaceuticals, and personal care products in wastewater sludge need to be addressed adequately in order to gain public support and acceptance.

From a **regulatory perspective**, the beneficiation of wastewater sludge triggers: the National Environmental Management Act<sup>66</sup>, the National Environmental Management: Waste Act<sup>67</sup>, and the Guidelines for Sewage Sludge Disposal<sup>68</sup>. These regulations classify untreated wastewater sludge as a hazardous waste. Therefore, treatment of more than 0.5 dry tons of sludge per day (equivalent to ~1.5 MI/d WWTW), including beneficiation, requires an Environmental Impact Assessment (EIA). Furthermore, thermal treatment solutions are also likely to trigger the National Environmental Management: Air Quality Act<sup>69</sup>.

These **policies limit the processing of large quantities of sludge** to a small number of qualified operators. Even post processing, once the sludge is of an A1<sup>70</sup> class quality in terms of microbial action and stability, the metal content may limit its application to farmland or combustion as a fuel.

**Availability of cheaper chemical fertilisers and fuels** presents a threat to the business case and opportunity for sustainable sludge management through beneficiating it into value added products.



<sup>66</sup> [https://www.environment.gov.za/sites/default/files/legislations/nema\\_amendment\\_act62\\_0.pdf](https://www.environment.gov.za/sites/default/files/legislations/nema_amendment_act62_0.pdf)

<sup>67</sup> [https://www.environment.gov.za/sites/default/files/legislations/nema\\_amendment\\_act59\\_0.pdf](https://www.environment.gov.za/sites/default/files/legislations/nema_amendment_act59_0.pdf)

<sup>68</sup> [https://www.fsmttoolbox.com/assets/pdf/161\\_-\\_SewageSludgeMar06vol1.pdf](https://www.fsmttoolbox.com/assets/pdf/161_-_SewageSludgeMar06vol1.pdf)

<sup>69</sup> [https://www.environment.gov.za/sites/default/files/legislations/nema\\_amendment\\_act39.pdf](https://www.environment.gov.za/sites/default/files/legislations/nema_amendment_act39.pdf)

<sup>70</sup> <http://sawic.environment.gov.za/documents/268.pdf>



# **FUNDING AND INCENTIVES**

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A range of general and sector-specific funding solutions and incentives is available to investors, manufacturers, and service companies in the green economy. It covers Development Finance Institutions (DFIs), local public and private sector financiers and investors, and a considerable range of tax incentives.

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The Berg River Dam,  
Western Cape.  
©Bruce Sutherland  
(City of Cape Town)



South Africa ranks as one of the top 15 nations in the world in terms of driving the green growth agenda (ahead of Australia, Singapore, and Finland). This drive is on the back of a range of funding solutions and tax incentives available to green technology manufacturers and service companies, as well as those who use or procure such goods and services.

**The South African Climate Finance Landscape looks at detailed project-level data, understanding in detail the source, disbursement, instrument and use.** The insights can support public and private role-players with information to shape sectoral strategies and selected policies and improve coherence and coordination between public and private level spending in the sectors. The South African Climate Finance Landscape has tracked R62.2 billion in annual climate finance invested in SA.

## 5.1. General database web page

The GreenCape Finance Desk hosts a web page with a number of Green Finance resources that cover funding and incentives available to companies operating in the green economy. A few of the available database are highlighted below.

The Green Finance Desk (GFD) primarily acts as a facilitator in the financing of green projects and green business. The GFD works across all sector desks at GreenCape. For more support please contact [jack@greencape.co.za](mailto:jack@greencape.co.za)

ACCESS THE SOUTH  
AFRICAN CLIMATE  
FINANCE LANDSCAPE

### 5.1.1. Green Finance Database

In conjunction with the Western Government Department of Economic Development and Tourism, GreenCape maintains a database of funding sources and incentives that may be relevant to green economy investors. The database contains information on more than 150 funding opportunities, including an overview of the opportunity and relevant contact details and links. It is ideal for any entity seeking a broad range of funding solutions and financial incentives, with South African institutions being the main source of opportunities. The database is available to view and download online<sup>71</sup>.

### 5.1.2. Government funding and incentives database

An updated document focused on South African government funding and incentives is available to view and download online<sup>72</sup>. These incentives cover local manufacturing, critical infrastructure grants, small enterprise development and a diverse set of sector specific incentives (i.e. Aquaculture Development and Enhancement Programme).

<sup>71</sup> <https://www.green-cape.co.za/content/focusarea/green-finance-databases>

<sup>72</sup> <https://www.greencape.co.za/assets/Uploads/Government-Funding-and-Incentive-Booklet.pdf>

### 5.1.3. Finfind database

Finfind<sup>73</sup> is an innovative online finance solution that brings together SMME finance providers and finance seekers. With a focus on finance readiness, Finfind has more than 200 lenders and over 350 loan products available to SMEs. The database is ideal for South African SMMEs who are seeking funding and/or business advisory services, and those who want to improve their understanding of finance.

Wesgro has partnered with Finfind to assist local companies seeking finance for their business. See more here: <https://wesgro.finfind.co.za/quiz/disclaimer/wesgro>

### 5.1.4. AlliedCrowds database

AlliedCrowds<sup>74</sup> is the first complete aggregator and directory of alternative finance providers in the developing world. Sign-up is free and allows users to access a global database where one can filter for sector (including greentech, agriculture and social impact), type of capital (equity, lending, grant), and type of funding (crowdfunding, angel investing, venture capital, impact investing). In addition:

- Themed databases around the Sustainable Development Goals (SDGs) and the World Green Economy Organisation (WGEO) are available.

- Reports, including a number specifically about African funding sources, can also be downloaded for free.
- Businesses / organisations can also contact Allied Crowds to create a customised funding database. This resource is ideal for any entity seeking a broad range of financial solutions on a global scale.

Click the buttons below to access the relevant content

GREENCAPE'S GREEN  
FINANCE WEB-PAGE

GREEN FINANCE  
DATABASE

GOVERNMENT FUNDING  
AND INCENTIVE BOOKLET

FINFIND WEBSITE

ALLIED CROWDS  
WEBSITE

<sup>73</sup> <https://www.finfindeasy.co.za/>

<sup>74</sup> <https://alliedcrowds.com/>



# **THE WESTERN CAPE: AFRICA'S GREEN ECONOMY HUB**

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The Western Cape is a world-class investment destination.

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Whatever your business,  
GreenCape's water team are  
here to help with the latest  
insights in the water sector.  
©Western Cape Department  
Of Agriculture

The province provides businesses and investors with prime locations, modern infrastructure, a skilled workforce, low operational costs and an abundance of natural resources. It is also a sought-after place to live, with unrivalled natural beauty, vibrant culture, excellent schools and universities, and an outstanding quality of life.

In 2017, Cape Town was ranked among the top 21 global investment destinations by Foreign Direct Investment (fDi) Intelligence, a division of the Financial Times.



## A great place for green business

There are compelling reasons why the Western Cape Province is viewed by many as Africa's green economy hub. Coupled with a strong and rapidly growing market for green technology and services in South Africa and beyond, the Western Cape offers:

- Africa's renewable energy and cleantech hub, with a critical mass of leading companies present.
- Local presence of major professional services and financiers.
- Significant market opportunities for businesses and investors in agriculture, energy services, utility scale solar and wind, waste, water, bioeconomy and resource efficiency.
- A supportive government that has made ease of doing business and the green economy key priorities.
- Five universities with comprehensive R&D capabilities and dedicated green economy skills programmes.
- A range of investment incentives in the Atlantis Special Economic Zone (SEZ) for Green Technologies.

## Supporting businesses and investors

The province also offers dedicated support for businesses and investors focusing on greentech and services, including:

### **Western Cape Department of Economic Development & Tourism:**

Driving the green economy policy landscape in the Province.

### **InvestSA One Stop Shop:**

Offers convenient investor support on permits, licensing and registrations - all under one roof.

### **City of Cape Town Enterprise and Investment:**

Creates an enabling environment to attract investment that generates economic growth and job creation in Cape Town

**GreenCape:** Provides dedicated support and market intelligence to green economy sectors.

**Wesgro:** The official investment and trade promotion agency for the Western Cape.

**SAREBI:** A business incubator providing nonfinancial support to green entrepreneurs.

**SARETEC:** Offers specialised industry-related and accredited training for the wind and solar industries.

## Market opportunities in the province and South Africa

Some of the major market opportunity areas in the province and South Africa in the next five years are outlined in the graphic on the next page (see individual MIRs and the GreenCape website for more information).

## R&D capabilities and skills

The region's five universities – University of Cape Town, Stellenbosch University, University of the Western Cape, the Cape Peninsula University of Technology and the George campus of the Nelson Mandela Metropolitan University – underpin all of this with comprehensive research and development (R&D) capabilities and dedicated green economy skills programmes.

## ATLANTIS SPECIAL ECONOMIC ZONE FOR GREEN TECHNOLOGIES

The Atlantis SEZ is a zone dedicated to the manufacturing and provision of services in the green technology space - technologies that reduce or reverse the impact of people on the planet. Wind turbines, solar panels, insulation, biofuels, electric vehicles, materials recycling and green building materials are all examples of green technologies that will be welcomed to the zone.

The zone welcomes manufacturers, service providers, suppliers and other players in the value chains of different green technologies. The SEZ is situated in the Atlantis industrial area north of Cape Town, south of Wesfleur, east of Dassenberg Road, and west of the Witsand community.

CLICK TO VIEW THE  
ATLANTIS SEZ WEBSITE

## Why invest in the Atlantis SEZ?

**There are strong and growing South African and African markets for greentech.** The South African greentech manufacturing market is worth at least R30bn; with a growing greentech market in the neighbouring countries. South Africa has opportunities in energy, waste, agriculture, transport and other sectors and is a great entry point for the whole of Africa, in particular the SADC region.

**Atlantis is a great location and development ready.** 94 hectares of zoned development-ready land is available for leasing to investors. Bulk infrastructure is in place and Atlantis has new public transport and shipping links, whilst boasting fibre connectivity too. Atlantis is also close to major ports, roads, universities and greentech markets.

**Investors have access to extensive investment support** through the One Stop Shop for investor support and the rest of the investor support ecosystem, which includes InvestSA, GreenCape, the City of Cape Town, and Wesgro. Together the ecosystem provides information and advocacy; market intelligence; facilitated access to permits and licenses, planning and development approval; and skills training.

**Investors and tenants are accessing attractive incentives** in the form of tax relief and allowances, employment tax incentives, fast-tracked development approvals, fee exemptions and subsidies.

**There is an attractive, wide-ranging skills base to recruit from** with 5 universities and many more colleges in the province, and a large range of unskilled, semi-skilled, technical and professional candidates.

FOR MORE INFO, CLICK  
TO EMAIL THE ATLANTIS SEZ  
BUSINESS DEVELOPMENT  
EXECUTIVE





# **GREENCAPE'S SUPPORT TO BUSINESSES AND INVESTORS**

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GreenCape is a non-profit organisation that works at the interface of business, government and academia to identify and remove barriers to economically viable green economy infrastructure solutions. Our vision is a thriving prosperous Africa, mobilised by the green economy

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GreenCape is a non-profit organisation that works at the interface of business, government and academia to identify and remove barriers to economically viable green economy infrastructure solutions. Our vision is a thriving prosperous Africa, mobilised by the green economy

Working in developing countries, GreenCape catalyses the replication and large-scale uptake of green economy solutions to enable each country and its citizens to prosper. We work with businesses, investors, academia and government to help unlock the investment and employment potential of greentech and services, and to support a transition to a resilient green economy.

We assist businesses by removing barriers to their establishment and growth and provide our members with:

- free, credible and impartial market information and insights
- access to networks of key players in government, industry, finance and academia
- an advocacy platform to help create an enabling policy and regulatory environment for green business

We assist local, provincial and national government to build a resilient green economy by providing:

- support on the development of standards, regulations, tools and policies
- expert technical knowledge on key sectors in the green economy
- access to networks of key players across business, academia, and internationally

Since inception in 2010, GreenCape has grown to a multi-disciplinary team of over 40 staff members, representing backgrounds in finance, engineering, environmental science and economics.

Our market intelligence reports form part of a working body of information generated by sector desks and projects within GreenCape's three main programmes – energy, circular economy and resources.

### Benefits of becoming a GreenCape member

We currently have over 2 500 members, and offer free membership. Becoming a member of GreenCape will give you access to the latest information regarding developments in the various sectors; access to tools, reports, and project information; and offer you the opportunity – through our networking events – to meet and interact with various stakeholders in the green economy.

**CLICK HERE  
TO BECOME  
A GREENCAPE  
MEMBER**

We have facilitated and supported ~R41bn of investments in renewable energy projects and manufacturing. From these investments, more than 19 000 jobs have been created.

Through our WISP (industrial symbiosis) programme, by connecting businesses with waste / under-used resources:



**309 200 fossil GHG emissions** saved (equivalent to the electrical usage of 39 800 households in SA);



**Over R120 million generated in financial benefits** (additional revenue, cost savings and private investments);



**69 permanent jobs** in member companies, as well as 25 temporary positions, and 218 economy-wide jobs in supply chains have been created.



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The writing of this MIR was made possible with the generous support of the Western Cape Government of South Africa.



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