



Waste Economy

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2016

Market Intelligence Report

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GreenCape

GreenCape is a non-profit organisation that supports and promotes the green economy - low carbon, resource efficient and socially inclusive - in the Western Cape, South Africa. We assist businesses and investors focusing on green technologies and services to remove barriers to their establishment and growth.

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List of acronyms

C&DW	Construction and demolition waste
CCT	City of Cape Town
CCA	Customs-controlled area
DEA	Department of Environmental Affairs
DoE	Department of Energy
dti	Department of Trade and Industry
EIA	Environmental impact assessment
eWASA	e-Waste Association of South Africa
e-waste	Electronic waste (also known as waste electrical and electronic equipment)
EPR	Extended producer responsibility
ETI	Employment tax incentive
GDP	Gross domestic product
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit (German Corporation for International Cooperation)
GRI	Gestamp Renewable Industries
GW	Gigawatt
IDC	Industrial Development Corporation
IT	Information technology
IPP	Independent power producer
IndWMP	Industry waste management plan
IWM	Integrated Waste Management
KfW	Kreditanstalt für Wiederaufbau Development Bank
kWh	Kilowatt hour(s)
MIG	Municipal Infrastructure Grant
MIR	Market Intelligence Report
MSA	Municipal Systems Act, No. 32 of 2000
MSW	Municipal solid waste
MW	Megawatt(s)
NEMA	National Environmental Management Act, No. 107 of 1998
NEM:WA	National Environmental Management: Waste Act, No. 59 of 2008
NPSWM	National Pricing Strategy for Waste Management
NWIB	National Waste Information Baseline
NWMS	National Waste Management Strategy
PE-HD	High-density polyethylene
PE-LD	Low-density polyethylene
PE-LLD	Linear low-density polyethylene
PET	Polyethylene terephthalate
POLYCO	Polyolefin Recycling Company
PP	Polypropylene
PPP	Public-private partnership
PRASA	Paper Recycling Association of South Africa
PRO	Producer responsibility organisation
PS	Polystyrene
PS-E	Polystyrene expanded
PSPC	Polystyrene Packaging Council
PVC	Polyvinyl chloride

R&D	Research and development
REDISA	Recycling and Economic Development Initiative of South Africa
REEEP	Renewable Energy and Energy Efficiency Partnership
REIPPPP	Renewable Energy Independent Power Producer Procurement Programme
SABIA	Southern African Biogas Industry Association
SAEWA	South African e-Waste Alliance
SALGA	South African Local Government Association
SAVA	Southern African Vinyls Association
SEZ	Special economic zone
StEP	Solving the e-waste problem
TGRC	The Glass Recycling Company
UNIDO	United Nations Industrial Development Organization
VAT	Value added tax
WC-DEADP	Western Cape Department of Environmental Affairs and Development Planning
WISP	Western Cape Industrial Symbiosis Programme
WMB	Waste Management Bureau
WtE	Waste to energy
WWTW	Waste water treatment works

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Executive summary

The waste management landscape in South Africa is changing as a result of policy and regulatory reform, pressures on municipalities (e.g. limited landfill airspace) and, to some extent, an increase in awareness of sustainability imperatives in the industry. The government, through various green economy policies and strategies, is also looking to the waste economy as a job creator.

The waste industry in South Africa currently consists mainly of collection and landfilling, with a limited amount (10%) of recycling. Household waste is managed by municipalities (and/or their service providers) and commercial and industrial waste is typically managed by the private sector (in larger municipalities), although some waste may still be disposed of at municipal landfills.

There is potential to increase the amount of recycling and to create opportunities for the development and sale of alternative waste treatment technologies. Recycling would likely be further driven by the call for the development of sector-specific industry waste management plans (IndWMPs) — such as the draft call for packaging, lighting and e-waste. These IndWMPs would potentially build on the initiatives already established in the industry. Alternative waste treatment may be driven by restrictions that will come into force soon on materials going to landfill and, in the case of municipalities, due to pressures on landfill airspace, among other factors.

Available data shows that the Western Cape generates 3.8 million tonnes of waste per annum, of which 70% (2.6 million tonnes) is generated by the City of Cape Town (CCT) (Western Cape Department of Environmental Affairs and Development Planning (WC-DEADP) 2012). Assuming that 65% (2.2 million tonnes) of the waste is recoverable, this would suggest that there is potential for a robust recycling economy in the Western Cape. Other waste sector opportunities include the recovery of commercial and industrial waste (420 000 tonnes/annum), construction and demolition waste (450 000 tonnes/annum) and agricultural wastes (874 000 tonnes/annum).

Given the above data, there are opportunities for an expanded waste management sector (collection, sorting, processing, treatment, etc.) — provided there is access to waste and, where applicable, a market for recovered materials (i.e. a secondary materials economy in South Africa or overseas). It must also be financially viable to recover materials to access these markets and/or to treat waste using alternative technologies.

Unlocking post-consumer waste and increase feedstock requirements for large-scale alternative waste treatment facilities (such as waste to energy) will require partnerships between private industry and municipalities. The Drakenstein, Stellenbosch and CCT municipalities all have undertaken or commenced with individual Section 78 processes, to assess the different service delivery mechanisms for the provision of alternative waste management. This illustrates an increasing focus on sustainable waste management — and, in particular, an increased focus on organic waste treatment.

With the 2013 general notices (GNR 634, GNR 635 and GNR 636) coming into effect in 2016, cheap disposal at communal and small to medium landfill sites will be illegal. This is both a challenge and an opportunity, as it is forcing industry to seek alternative waste management solutions. In particular, the Western Cape would need to focus on providing waste solutions for agricultural residues, as

this area is generally not provided with adequate waste disposal infrastructure. Furthermore, the lighting industry will need a local solution, as light bulb disposal at landfills will be banned.

In light of these opportunities, more accurate data is needed to assist with investment planning. The WC-DEADP understands this, and is currently ensuring that the waste information system is adopted by municipalities and industry. At the time of writing, 80% of Western Cape municipalities have been reporting consistently for six months (June to December 2015). Should this continue, a more accurate reflection of waste tonnages can be obtained.

The country and province's waste management landscape is changing. However, rather than a sudden change, there is a steady incremental change each year as South Africa moves towards a more sustainable waste management model.



1 – Introduction and purpose

This market intelligence report (MIR) was compiled by GreenCape’s Waste Economy Sector Desk. It is aimed at investors and businesses that are currently active or interested in providing alternative waste treatment technologies and services in South Africa generally, and the Western Cape specifically.

This MIR outlines how the waste management landscape is changing and presents opportunities for businesses and investors in an expanded waste management sector. There are opportunities across the value chain in the collection, sorting, processing and treatment of waste, provided that there:

- is access to waste;
- are markets for recovered materials;
- is a business case that makes the recovery of materials viable.

This report provides an overview of the waste industry in the South African context, focusing on the Western Cape, and provides information on waste data, legislative updates, investment and incentives and opportunities across the value chain.

For questions or queries, or to access GreenCape’s services contact our Waste Sector Desk: waste@greencape.co.za



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2 – Industry overview

The waste industry in South Africa currently consists mainly of collection and landfilling, with a limited amount (10%) of recycling. Household waste is managed by municipalities (and/or their service providers) and commercial and industrial waste is typically managed by the private sector (in larger municipalities), although some waste may still be disposed of at municipal landfills.

The waste management landscape is changing from predominantly landfilling to more waste diversion. This is mainly due to policy and regulatory reform, pressures on municipalities (e.g. limited landfill airspace) and, to some extent, an increase in awareness of sustainability imperatives in the industry. Furthermore, the government, through various green economy policies and strategies, is also focusing on the waste economy as a job creator.

2.1. Industry structure

According to the South African Constitution, local municipalities are mandated to collect domestic waste. Municipalities can either provide the collection services directly or appoint private contractors (these contracts are generally for three years). The commercial and industrial sectors are responsible for the safe disposal of their own waste, which includes both general and hazardous waste fractions, and generally appoint waste service providers to manage their wastes.

Given the responsibility assigned through the Constitution and elaborated on in the Municipal Systems Act (No. 32 of 2000) (MSA), municipalities must ensure that adequate waste collection and disposal facilities are available to meet the need within their boundaries. Alternative waste treatment, such as recycling or waste to energy (WtE), is not explicitly

mentioned in the definition of municipal functions in the MSA. It is, however, considered to be a municipal support activity¹ in terms of the MSA, on the basis of the interpretation applied in the Treasury Guideline (National Treasury 2008).

Furthermore, the National Environmental Management: Waste Act (No. 59 of 2008) (NEM:WA) and the National Waste Management Strategy (NWMS) (2011) mandate municipalities to implement alternative waste management to divert waste from landfill and minimise environmental degradation. Based on current waste management costs and limited capacity the implementation of alternative waste management practices (such as recycling) is perceived as more costly, relative to landfill. This perception has been partially responsible for the slow uptake of alternative waste management measures, despite national laws and mandates.

The demand for basic services, coupled with the demand for alternative waste treatment (which is usually accompanied with the need for new infrastructure), cannot be met using current (allocated) government finances. As a result, municipalities need to look into innovative and alternative ways of funding these support functions. This includes partnerships with the private sector, and provincial and national government playing a role in the implementation of extended

¹ These are municipal activities that are reasonably necessary for, or incidental to, the effective performance of a municipality's functions and the exercise of its powers.

² EPR refers to measures that extend a person's financial or physical responsibility for a product to the post-consumer stage of the product.

producer responsibility (EPR),² allowing for the levies charged to offset some of the infrastructural and operational demands. The White Paper on Local Government recommends that municipalities look for innovative ways of providing and accelerating the delivery of municipal services (South African Local Government Association (SALGA) 1998).

2.2. Market size

The financial value of the formal South African waste sector (both public and private) in 2012 was estimated as R15.3 billion — 0.51% of South Africa’s gross domestic product (GDP). The majority of this revenue was generated by large enterprises and metropolitan municipalities, which was more than 80% in their respective sectors (DST 2014).

In 2012, companies that had been in the waste industry for more than 25 years generated 62% (R4.3 billion) of all revenue from waste activities. Companies that started up waste activities in the past five years contributed a minimum of 3% (R188 million) into the economy in 2012 (DST 2014).

The market value of the formal South African waste sector was R15.3 billion in 2012, 0.51% of GDP

2.2.1. South African

According to the National Waste Information Baseline (NWIB), South Africa generated approximately 108 million tonnes of waste in 2011, consisting of 59 million tonnes of general waste; 48 million tonnes of unclassified waste;³ and 1 million tonnes of hazardous waste (see Figure 1 for the split in terms of percentage of total waste) (DEA 2012).

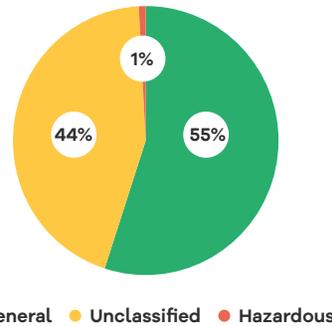


Figure 1: Classification of total waste generated in South Africa in 2011

The current status of waste management in South Africa illustrates a culture of generation and disposal, as only 10% of waste is recovered to be reprocessed/repurposed. It is estimated that 65% of the classified waste (around 38 million tonnes) is classified as recyclable,⁴ and therefore could theoretically be diverted from landfill and recovered to be reprocessed/repurposed (DEA 2012).

The ‘business as usual’ approach to waste management (90% to landfill) results in an industry that is estimated to be worth R15 billion in revenue and which provides 29 000 people with employment (DST 2014). Based on global trends, by diverting waste away from landfill, South Africa could increase the revenue made in this sector. The Department of Science and Technology (DST) (2014) estimated that an additional R17 billion/year worth of resources could be unlocked by 2022, if 20% of industrial and 60% of domestic waste is diverted.

Accordingly, the South African government has mandated waste management as one of the critical areas it needs to address.

By diverting 20% of industrial and 60% of domestic waste away from landfill the waste sector could grow by R17 billion/year.

³ These are wastes that are listed under both general and hazardous waste and will require further classification, in terms of the Waste Classification and Management Regulations (GNR 634).

⁴ Recyclable materials such as construction and demolition waste (20%), metals (13%), organic waste (13%) and common dry recyclables (including paper, plastics, glass and tyres) (19%).

2.2.2. Western Cape

In terms of the available data, the NWIB study estimated that 20% (21.6 million tonnes) of the waste generated in South Africa in 2011 was generated in the Western Cape, of which 55% (11.8 million tonnes) was general waste (DEA 2012). It should be noted that this is significantly higher than the 2012 Western Cape Government estimates of 3.8 million tonnes in 2010 (WC-DEADP 2012) and 5.8 million tonnes projected for 2015 (WC-DEADP 2013).⁵

To make any sense of the data from a planning/ investment perspective, it is necessary to understand where the waste is being generated. Table 1 illustrates waste generation figures per municipality (WC-DEADP 2013).

Western Cape Municipalities	Tonnes (annual)
City of Cape Town	2 670 385
Cape Winelands	453 504
Eden	302 746
West Coast	190 995
Overberg	151 618
Central Karoo	38 065
Total	3 807 313

Table 1: Waste tonnages per municipality (2012)

Figure 2 illustrates that the CCT generates approximately 70% of the total waste generated in the Western Cape. This is understandable, as over 65% of the Western Cape's population is located within the city (Stats SA 2014). Furthermore, the city is the central hub for commerce and industry, and provides over 73% of the province's GDP (Western Cape Provincial Treasury 2013).

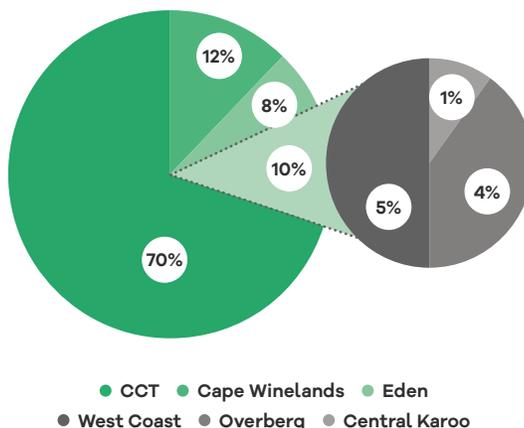


Figure 2: Municipal waste generation percentages (2013)

As the largest municipality within the Western Cape, the CCT, through its Solid Waste Management Department, spends between R200 million and R250 million on capital expenditure and approximately R2.1 billion on operations annually (CCT 2013). It is estimated that about 25-30% of its operational expenditure goes to private companies, as service providers and/or contractors (waste collection, waste diversion facility operations, etc.) (WC-DEDT 2014). This illustrates that there is a possible R650 million available to industry when providing services to the CCT.

⁵ The Western Cape Department of Environmental Affairs and Development Planning (WC-DEADP) has identified that waste data varies greatly, and is currently collecting data with a view to acquiring more accurate and disaggregated data.

3 – Policy and regulation

This section provides a brief introduction to the regulatory framework around waste management, including a focus on updates made in the past year. These updates are expected to affect investment decisions made by potential investors and businesses in the waste sector.

3.1. Waste management policy and legislation in South Africa

Historically, waste management in South Africa focused primarily on end-of-pipe technologies such as landfilling and incineration (medical waste). With the promulgation of the National Environmental Management Act (No. 107 of 1998) (NEMA) and the NEM:WA, which ultimately aim to give effect to Section 24 of the Constitution — ‘to secure an environment that is not harmful to the health and well-being of the people of South Africa’ — waste management in South Africa has evolved to include additional requirements, such as waste minimisation and recycling.

The NEMA and the NEM:WA are guided by integrated environmental management principles that aim to ensure negative environmental impacts are prevented, mitigated and regulated by providing a range of tools and measures to monitor and manage activities that generate environmental impacts.

With the promulgation of the NEM:WA in 2008, all organs of state within South Africa were bound to achieve the objectives of the waste management hierarchy.

Among other things, the NEM:WA sets out to achieve the following objectives:

- minimise the consumption of natural resources;
- avoid and minimise the generation of waste;
- reduce, re-use, recycle and recover waste;
- treat and safely dispose of waste, as a last resort.

To achieve the objectives of the Act, the South African government was obligated to develop a NWMS in 2011. This set out to promote the waste management hierarchy and ensure effective service delivery, whilst growing the waste economy by improving job creation and business development.

To ensure that the NEM:WA objectives are achieved without negatively impacting the environment, Government Notice No. 718 of 2009, recently amended by No. 921 of 2013, was promulgated. This government notice provides a list of waste management activities that may have a detrimental effect on the environment and which require a waste management licence to be issued prior to undertaking the activity.

3.2. Working with municipalities

As illustrated in Section 2.1, the MSA governs municipalities when they improve, extend or upgrade a municipal service or establish a new municipal service that is currently outside the existing municipal finances, among other things. The following steps are required before a municipality can partner with a private entity⁶:

- Section 76 describes the types of mechanisms can be used (internal and external);
- Section 77 stipulates when the service delivery must be reviewed (significant upgrade, new service, etc.);
- Section 78 evaluates the different service delivery mechanisms:

- Section 78(1) assesses the different internal service delivery mechanisms, as well as the municipality's capacity for implementing the different mechanisms.
- Section 78(2) stipulates that a municipality may decide on an internal mechanism (based on the outcome of the Section 78(1)), but may also explore the possibility of providing the service via an external mechanism.
- Section 78(3) dictates the processes that must be followed in assessing the provision of the service via an external mechanism.
- Section 78(4) stipulates that a municipality may decide on an appropriate internal or external service delivery mechanism, based on the results of the section 78(3) study.
- Section 78(5) stipulates that the application of the Section 78 process must be aligned with other legislation.

Figure 3 below provides a summary of the process.

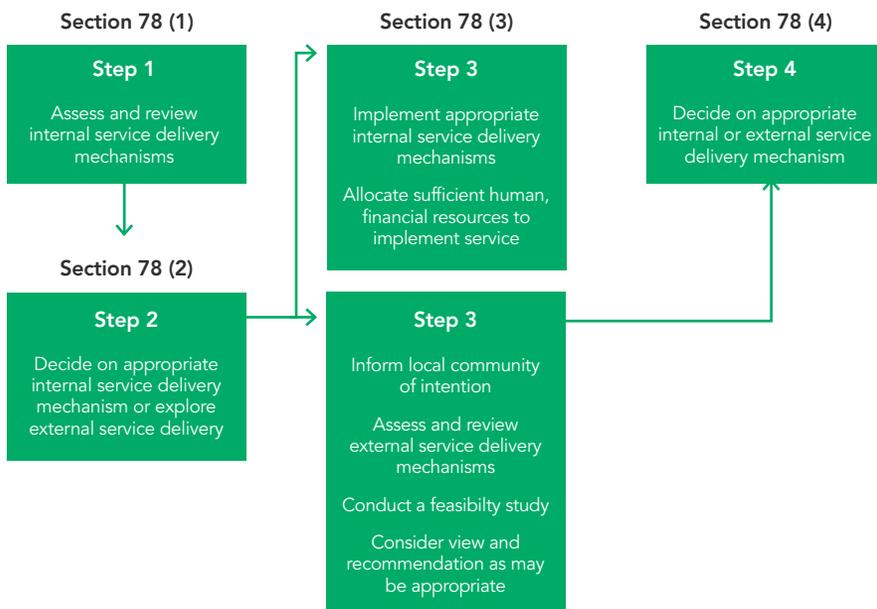


Figure 3: Section 78 process

⁶ It should be noted that these are the steps for modification of a municipal service/function. The end result may or may not result in appointment of a private partner.

3.3. Recent legislative changes

In 2014, the NEM:WA was updated. This update made provision for the development of a National Pricing Strategy for Waste Management (NPSWM) and the establishment of the national Waste Management Bureau (WMB).

The NPSWM aims to provide the guiding methodology and basis for setting waste management charges in South Africa. The funds raised will support the implementation of IndWMPs and the recycling and reuse of specific waste streams. The establishment of the WMB is directly related to achieving the goals of the NPSWM. The objectives of the WMB are mainly to:

- enable waste minimisation and re-use, recovery and recycling of waste materials;
- monitor and disburse revenue collected through economic instruments applied to achieve the WMB's first objective;
- implement, monitor and evaluate the effects of IWMPs;
- build capacity in the WMB to be able to provide support for municipal waste management plan development and implementation;
- develop municipal capacity-building programmes.

A number of stakeholders have expressed concerns about the potential administrative costs of a centralised body, such as the WMB, versus dedicated sector-driven and industry-driven managed schemes, as currently implemented in some industry sectors.

The WMB is in the process of appointing staff, and a draft pricing strategy has been developed and circulated for public comment. The pricing strategy should have been finalised in September 2015, and it was expected that the minister would publish a policy that outlined the powers and functions of the WMB. The pricing strategy has been submitted to the Minister for approval and it is expected that the WMB will be operational from 1 April 2016.

3.3.1. Existing legislation that will have implications in 2016

In 2013, the Waste Classification and Management Regulations (GNR 634), the National Norms and Standards for the Assessment of Waste for Landfill Disposal (GNR 635) and the National Norms and Standards for the Disposal of Waste to Landfill (GNR 636) were promulgated. Broadly, these regulations outline the classification, general handling, reporting and analysis of wastes for disposal.

In terms of the regulations above, the assessment of waste destined to landfill and the associated landfill classification will come into effect on 23 August 2016. The legislation makes limited provision for 'unlined' landfills. Only uncontaminated construction and demolition waste (C&DW) and excavated earth will be allowed to be disposed at a Class D (without an engineered plastic liner) landfill. All other waste would need to be disposed of at either Class A⁷ (hazardous), Class B or C (general waste)⁸ landfills. These standards are in line with the international standards of a sanitary landfill. The obvious challenge lies in the fact that disposal at the appropriate landfill sites is not possible for all industry, due to logistics and distance. Alternative solutions are therefore required.

Also coming into effect on 23 August 2016 is the landfill ban for all types of light bulbs. This is a concern, as there are only two service providers in South Africa that provide an effective alternative solution.

⁷ H:H/H:h in terms of the Minimum Requirements for Waste Disposal at Landfill (2nd edition, Department of Water Affairs and Forestry, 1998).

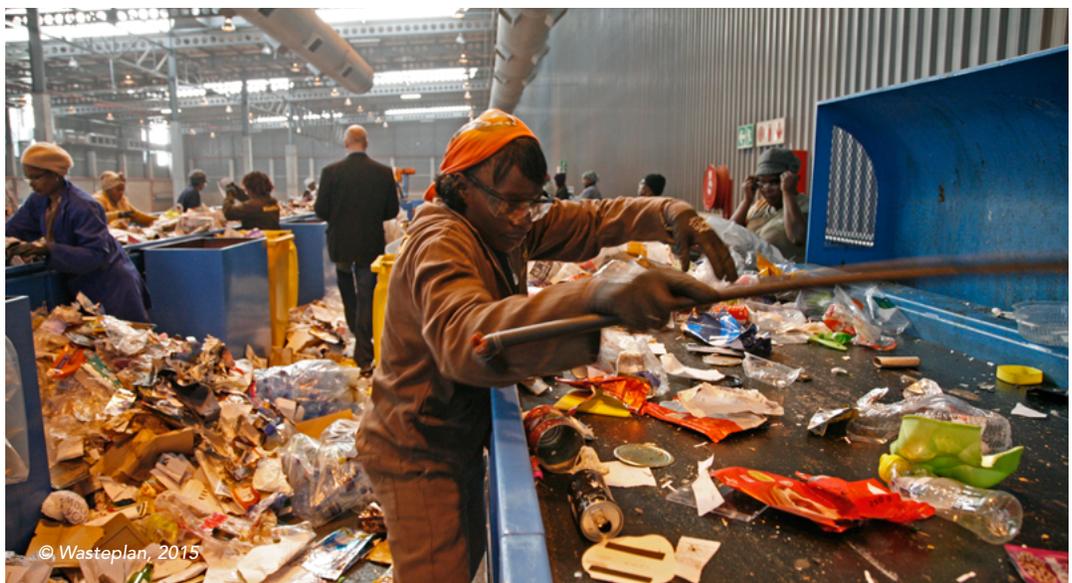
⁸ G:L:B+ in terms of the Minimum Requirements for Waste Disposal at Landfill (2nd edition, Department of Water Affairs and Forestry, 1998).

3.3.2. Draft legislation

On 23 June 2015, the minister published the Notice of Intention to Require the Paper and Packaging Industry, Electrical and Electronic Industry and Lighting Industry to Prepare and Submit to the Minister Industry Waste Management Plans for approval. This draft call illustrates a readiness from government to engage industry in implementing an EPR scheme that would solve issues in terms of waste diversion and the cost thereof.

The draft call requires that the producer must submit a plan for approval. But, it also states that should a producer submit a plan, it must ensure that the submitted IWMP is representative of at least 70% of the producers registered with the department. It is understood that this implies that an institution/producer responsibility organisation (PRO) would need to be established. All producers would need to belong to an IWMP.

In October 2015, the minister published the National Environmental Management Laws Amendment Bill. Included in this was the fourth amendment of the NEM:WA. The proposed changes have, among other things, moved the definitions of waste to the front of the Act, and Schedule 3 has been reduced from a definition list to a list of waste sources.



4 – Opportunities and barriers for alternative waste management technologies

This section focuses on the opportunities and barriers in the dry recyclables, C&DW and WtE sectors, and identifies the municipalities that are ready to be engaged by industry.

In terms of the waste management hierarchy, South Africa is predominantly focusing on recycling, recovery (energy), and treatment and disposal — the last three tiers in Figure 4 below.



Figure 4: Waste management hierarchy

In this regard, there is potential to increase the amount of recycling and to create opportunities for the development and sale of alternative waste treatment technologies. Among other elements, recycling may be driven by the call for the development of sector-specific IndWMPs (such as packaging, lighting and e-waste), and potentially building on the initiatives already established by the industry.

Alternative waste treatment may be driven by restrictions that will come into force soon on materials going to landfill and, in the case of municipalities, due to pressures on landfill airspace, among other things.

4.1. Recyclables

The economics of recycling are simple: if the cost of collecting and processing something is cheaper than the resulting end-product, or if there is a large enough subsidy available, then it is generally recycled. This holds true for commodities such as paper, metal and certain types plastics typically used in packaging. For everything else, including the vast majority of packaging types (from a blister pack to a flexible food package) and almost all objects (pens, toothbrushes, etc.), it is understood to cost more to collect and process than it is to landfill. Thus, these materials are considered as waste, which means they will either be landfilled or could potentially be used for WtE.

However, recycling is still ranked higher in the waste management hierarchy than (energy) recovery and treatment and disposal, which is an attempt to have 'rules of thumb' for more sustainable approaches to managing waste.

In the face of landfill airspace shortages and the steady (albeit slow) increase in the cost of raw materials, as well as targets set by the NWMS and expected IndWMPs, growth in the recycling industry is expected.

Although recycling is legislated within South Africa, the actual recycling activities are largely driven by industry through the establishment of industry bodies or PROs. A PRO is generally a non-profit organisation funded by industry to promote the recovery and recycling of recyclable materials in South Africa.

All mainstream recyclables (paper, glass, plastics and metal), tyres and electronic waste (e-waste) have respective PROs responsible for the diversion of the waste from going to landfill. Table 2 shows a list active PROs and the tonnages generated and diverted for South Africa.

Currently, in most cases, membership of and financial contribution to PROs is voluntary. However, for the management of waste tyres, it is legislated that all tyre producers/importers must be a member of REDISA (the tyre management PRO) and pay a levy on all tyres sold in South Africa. Thus, to access waste tyres, it is needed to consult REDISA. However, although it would be beneficial to engage with other PROs when dealing with the respective wastes (plastics, paper, etc.), it is not mandatory.

The following sections are based on information obtained from the PROs¹⁰. Should additional information be required, a list of PRO contact details has been included in Appendix A.

Table 2: PROs and recyclables managed

Name of PRO	Material	Generated (tonnes)	Diverted from landfill (tonnes)	Still available for recycling (tonnes)
Paper Recycling Association of South Africa (PRASA)	Paper	2 200 000	1 100 000	1 100 000
Plastics SA	Umbrella organisation for plastics ⁹	1 400 000	315 000	1 085 000
The Glass Recycling Company (TGRC)	Glass	845 663	338 265	507 398
e-Waste Association of South Africa (eWASA) South African e-Waste Alliance (SAEWA)	e-Waste	322 000	45 000	277 000
Metal Recyclers' Association of South Africa	Scrap metal	3 121 000	2 497 000	624 000
REDISA	Tyres	270 000	109 906	160 094

⁹ PETCO, Polyolefin Recycling Company (POLYCO), Southern African Vinyls Association (SAVA) and the Polystyrene Packaging Council (PSPC).

¹⁰ Please note: the level of detail in the data provided by PROs is not uniform, and depends on how long the organisation has been in operation and the size of its member base (larger base, access to more funding). In terms of consistency, sufficient data is provided to assist investors in making informed decisions – for instance, data on tonnages of material produced, diverted from landfill, and what could still be diverted.

4.1.1. Paper and cardboard

According to PRASA's paper statistics, over 2.2 million tonnes of paper was used in South Africa in 2014. Only 1.6 million tonnes (72%) of the paper produced is considered recoverable, whilst 620 000 tonnes (27%) is unsuitable for recycling — including tissue and wax paper, bank notes, etc. or paper that has been exported and cannot be locally recovered (PRASA 2015).

Of the 72% of recoverable paper waste, 1.1 million tonnes (66%) is recycled and 570 000 tonnes (34%) could still be diverted from landfill. Figure 5 indicates the percentage split (PRASA 2015).

There is opportunity to divert an additional 570 000 tonnes of paper waste from landfill.

South Africa's consumption of office paper has declined in line with global trends. The consumption of non-recyclable tissue paper has increased, as more people can afford such convenience products (PRASA 2015). Based on PRASA's data, it is estimated¹¹ that 430 000 tonnes of paper is available for recycling in the Western Cape.

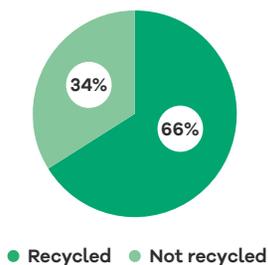


Figure 5: Recycling of recoverable paper waste in South Africa

The growth in the use of tissue paper also suggests that there is some potential for this to be used in alternative waste treatment (anaerobic digestion or other WtE projects), provided this can be separated out adequately and economically (e.g. collected with the organic fraction for anaerobic digestion, separated at source or managed with residual waste).

It is estimated that 430 000 tonnes of paper is available for recycling in the Western Cape. The growth in the use of tissue paper also suggests that there is some potential for this to be used in alternative waste treatment

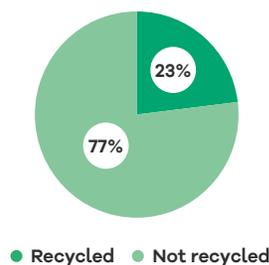


Figure 6: Plastic recycling in South Africa

¹¹ This estimate is based on the Western Cape's economy, at 13% of national GDP.

4.1.2. Plastics

According to Plastics SA, 1.4 million tonnes of plastics was produced and 315 000 tonnes was diverted from landfill in 2014, resulting in a recycling rate of 23%. Of the 315 000 tonnes of plastics diverted from landfill, 280 000 tonnes (90.2%) was recycled in South Africa and 31 000 tonnes (9.8%) was exported for reprocessing overseas (mainly China) (Plastics SA 2015a).

Over 220 000 tonnes (80%) of the plastics recycled in South Africa come from post-consumer sources (domestic and industrial use), and the other 20% is either directly from the factory producing the plastic (ex-factory) or reused in-house. Figure 7 provides a breakdown of the sources of plastics reported for recycling. This is unsurprising, as approximately 55% of all polymers are used for packaging (Plastics SA 2015a). Figure 8 shows total plastics produced versus the total recycled, by polymer type¹² in tonnes, from all sectors. Low-density and linear low-density polyethylene (PE-LD/LLD) is the most recycled material (in relative fraction and

absolute amounts), followed by high-density polyethylene (PE-HD), PP and PET (in absolute amounts) (Plastics SA 2015b). Note that 40% of PET bottles are recycled (PETCO 2015).

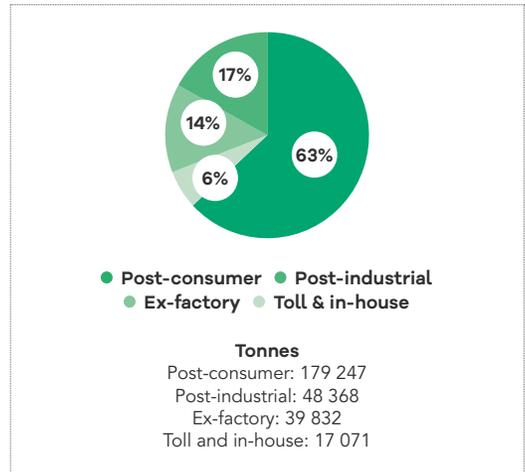


Figure 7: Recycled plastic material sources

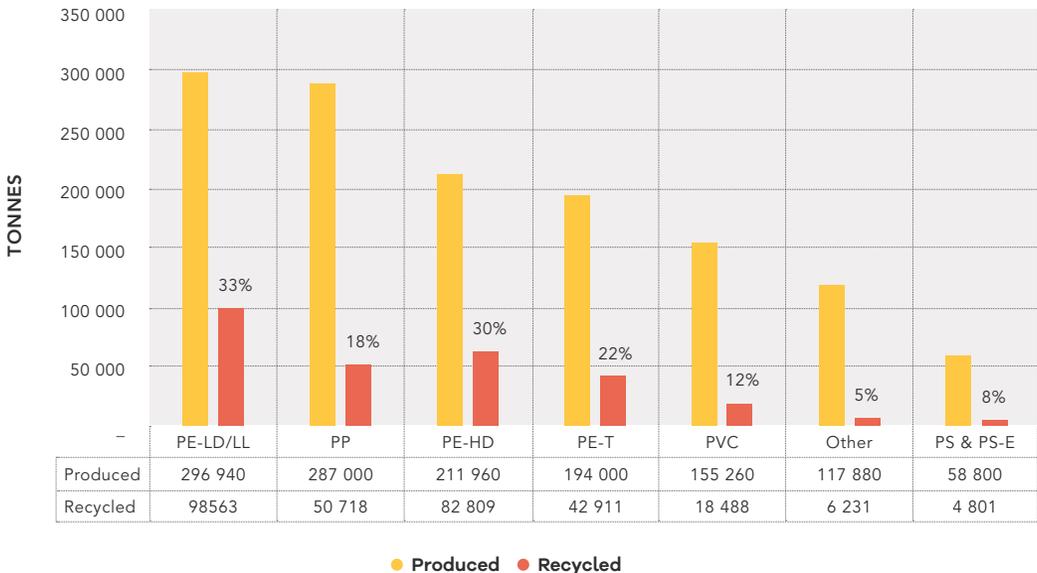


Figure 8: Plastic production by polymer type vs recycling tonnes

¹² Polyethylene terephthalate (PET); high-density polyethylene (PE-HD); low-density/linear low-density polyethylene (PE-LD/LLD); polypropylene (PP); polyvinyl chloride (PVC) and polystyrene, polystyrene expanded (PS and PS-E).

Compared to 2013, all plastics sectors have improved, by recovering and collecting more waste. However, as indicated in Figure 6, only 23% of all plastics generated is being diverted from landfill.

Based on Plastics SA's data, it is estimated that 180 000 tonnes of plastic is available for recycling in the Western Cape. One of the great challenges the plastics industry faces is accessing post-consumer waste plastics, which is largely collected by municipalities. This would require the need to increase work with municipalities to improve collection networks and assist with separation-at-source projects.

180 000 tonnes of plastic is available for recycling in the Western Cape

4.1.3 Glass

TGRC reported that in 2014, 845 000 tonnes of glass packaging (which includes jars and bottles, etc.) was produced; of this, 338 000 tonnes (40%) was recycled. However, in terms of glass bottles, of the 3 million bottles produced, 2.4 million bottles (80%) were diverted from landfill through a combination of recycling and the return and re-use deposit system (TGRC 2015).

Based on TGRC's data, it is estimated that 190 000 tonnes of glass is available for recycling in the Western Cape. However, it should be noted that TGRC's membership only comprises of glass packing companies, and does not include manufactures of float or automotive glass. In light of this, it is likely that the market for glass recycling is even larger than estimated. There is one recycler in the Cape Town that recycles float glass into glass aggregate. This facility's gate fees (R200/tonne) are currently lower than the municipal landfill gate fees, which charge up to R450/tonne for the disposal of glass (as it is classified as special waste). Although this is a cost-effective alternative, it is believed that float glass is finding its way to landfill mixed with C&DW, and may be accepted for free.

The CCT will need to strengthen the enforcement of waste accepted at landfill, to ensure that float glass is not accepted for free — this is both a loss of revenue for the municipality, and the potential to divert waste from landfill.

190 000 tons of glass is available for recycling in the Western Cape. This excludes automotive or float glass.

4.1.4. e-Waste

According to eWASA, South Africa produces approximately 322 000 tonnes of electronic waste (e-waste) per annum. Table 3 provides the tonnages of total waste, as classified by eWASA. Currently, only 45 000 tonnes (12%) is being recycled (Dataweek 2015).

Table 3: e-Waste total waste classification (South Africa)

e-Waste classification	Tonnes	Percentage recycled
Large appliances (stoves, fridges)	125 000	39%
Consumer equipment	78 000	24%
Information technology (IT) equipment	77 000	24%
Small household appliances (toasters, kettles, etc.)	40 000	13%

The StEP (solving the e-waste problem) Initiative estimates that the average South African generates 6.6 kg of e-waste per annum (StEP Initiative 2015). Extrapolating this against the Western Cape's population of 5.8 million, it is expected that approximately 40 000 tonnes of e-waste is available in the Western Cape. This may be higher if the amount of e-waste that is typically accumulated (e.g. placed in storage) rather than disposed of, is accounted for. It is uncertain whether accumulated e-waste will be more readily disposed of if secure disposal mechanisms are available.

There are only a few recyclers/dismantlers operating in the Western Cape. E-waste is classified as hazardous waste in terms of the NEM:WA, and obtaining a waste management licence is a costly and lengthy process. This is a barrier for business development in this sector, as most recyclers operating in this space are medium-sized enterprises that cannot afford the associated environmental impact assessment (EIA).

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Approximately 40 000 tonnes of e-waste is available in the Western Cape, not including additional accumulated e-waste.

4.2. Construction and demolition waste

Builders' rubble¹³ is largely landfilled in South Africa, in spite of its potential for re-use and the high financial and societal costs of landfilling. One of the biggest opportunities in the recovery, processing and application of builders' rubble lie in the uptake of material into roads. There are, therefore, prospects on the supply side for the crushing industry, and on the demand side in road material, for both the public and private sectors.

The economy in builders' rubble must be considered at a regional scale, due to the low value of the material relative to logistics costs. Economic viability is therefore dependent on the local sourcing and processing of materials, such that the transport and processing costs do not exceed the economic value of the resources.

Within the CCT, about 43 000 cubic metres (m³) of builders' rubble is dumped at landfill every month. An estimated 20-30% of that material is suitable for sub-base material in roads, such that there is an estimated R1.1-R1.4 million worth of sub-base material going to landfill every month.

The current crushing capacity in the CCT is in excess of 17 000 m³ per month.¹⁴ With extra capacity and further investment, it is expected that a further 38 000 m³ per month will be available in the next couple of years.

There are currently few externally imposed drivers on the economy, such as policy and legislation dictating diversion from landfill, or industry body oversight governing the handling, treatment and disposal of builders' rubble. Current drivers of the C&DW economy include:

- rising virgin material prices;
- regulation of waste flows, meaning that the costs of waste handling are increasing;
- limited landfill airspace.

Due to the scarcity of landfill airspace, incentives to divert wastes and disincentives to dispose of wastes may very well be implemented at local municipal level in the next five years, if the current practice of disposing large volumes continues.

Opportunities for the crushing sector include tenders for crushing contractors at the CCT and Stellenbosch landfills. To access this opportunity in the CCT, crushing companies will need to be accredited through the Solid Waste Management Department as a waste management service provider.

To capitalise on the opportunity, strict quality control for verified quality products is required to satisfy the demand side in foundations for structures, and especially for inclusion in roads. The quality control process must start at the point of waste generation — separation at source is the primary factor determining material quality.

¹³ The mineral component of C&DW consists of concrete, bricks — both clay and concrete blocks — and stone.

¹⁴ Based on a survey of five major crushers in Cape Town.

Work in developing the builders' rubble economy is focusing on best practice guidelines for the crushing industry, to produce high-quality products that will meet demand-side requirements in association with industry stakeholders. In the longer term, material specifications for aggregates that are inclusive of material recovered from builders' rubble will be developed.

4.3. Waste to energy

To date, the main WtE projects undertaken by the private sector revolve around the small to medium scale,¹⁵ biogas projects, where the energy (electricity, heat and/or gas) is for own use, or wheeled through the grid to a nearby private buyer.

The other market opportunity is the Department of Energy's (DoE) Renewable Energy Independent Power Producer Procurement Programme (REIPPPP), which has allocated 145 MW for large-scale biogas, biomass and landfill gas projects (those above 5 MW). Of the 145 MW, 59 MW has already been allocated — see Table 4.

Table 4: REIPPPP bioenergy allocations

Technology	Round 1: MW allocation	Round 2: MW allocation	Round 3: MW allocation	Round 4: MW allocation	Remaining MW
Landfill gas	0	0	18	0	7
Biomass	0	0	16	25	19
Biogas	0	0	0	0	60

4.3.1. Challenges faced by waste to energy projects

While WtE has been widely implemented in many European countries, such as the Netherlands and Germany, the uptake has been limited in South Africa. Growth remains slow compared to other renewable energy sources, such as solar and wind. This is mainly due to a lack of economic viability, but also

legal and regulatory barriers. The main challenges faced include:

- **Low gate fees** for the waste at landfill, which makes it difficult for other technologies to compete with the cheaper option of landfilling.
- **Low electricity prices** compared to developed countries. Although the cost of electricity is rapidly increasing, WtE is still more expensive (c. R1.40-R1.60/kWh) compared to bulk electricity prices (i.e. R0.50-R0.90/kWh more on average¹⁶).
- **Access to sufficient feedstock.** Many thermal WtE technologies require large-scale facilities to achieve economies of scale and become affordable (e.g. 1 000-2 000 tonnes/day). In the Western Cape, 70% of the total waste generated is located in the CCT. This implies that any large-scale facility located outside of Cape Town will probably not be viable without additional waste from neighbouring municipalities. However, aggregation of waste may result in location of facilities far from waste-generation sources, increasing transport costs drastically and could reduce the financial viability of a WtE facility.

- **A lack of feed-in tariffs for renewable energy** outside of the REIPPPP, which only applies to projects larger than 5 MW. Such projects are limited by the feedstock challenge described above.

Additional challenges include:

- **Absence of a policy/regulatory framework** for grid connection by

¹⁵ Biogas to electricity, landfill gas to electricity, small-scale pyrolysis plants generating biodiesel, biodiesel from waste oils, and fuel replacement in industrial boilers using biomass.

¹⁶ Based on existing and new build coal derived electricity generation

independent power producers outside of the REIPPPP.

- **Long-term supply contract for waste facilities.** Most WtE facilities will have a payback period of 15-20 years, and require contracts of the same duration period for the waste feedstock to attract investors. This has proven challenging in the South African context for companies that target municipal solid waste (MSW), as municipalities typically have three- to five-year procurement contracts renewable. Note that this is not applicable to commercial and industrial wastes (e.g. malls, factories, abattoirs, etc.), as these facilities are responsible for handling their wastes in a responsible manner. However, financiers may also not consider securing such long-term contracts from the private sector as bankable. Section 5 provides more details around regulatory requirements to access MSWs.

4.3.2. Existing and emerging waste to energy opportunities

There are, however, some WtE opportunities that show current and future growth potential in South Africa, including:

- landfill gas and biomass through large-scale REIPPPP projects;
- biogas at waste water treatment works (WWTW);
- small-scale facilities, such as:
 - small-scale to medium-scale biogas, where the energy (electricity, heat and/or gas) is for own use,¹⁷ or wheeled through the grid to a nearby private buyer;¹⁸
 - small-scale pyrolysis plants generating biodiesel from waste oils;
 - fuel replacement in industrial boilers using biomass.

4.3.2.1. Large-scale REIPPPP projects

These technologies still face significant challenges with regard to the lengthy and

costly environmental and bidding processes. Thus far, one landfill gas and two biomass projects have been successful, at R0.94/kWh and R1.40/kWh respectively, during the third and fourth rounds of the REIPPPP.

The biogas allocation for large-scale projects (>5 MW) was removed from the fourth round, due to lack of industry uptake at R0.90/kWh. However, the South African Biogas Industry Association (SABIA) organised a biogas survey to understand the preferred tariffs that would stimulate the biogas sector. The outcome was presented to the Independent Power Producer (IPP) Unit within National Treasury. It is understood that this engagement has resulted in a tariff increase to R1.40/kWh.

4.3.2.2. Biogas at waste water treatment works

Many of the WWTW have installed biogas plants, built in the early 1970s, which are currently idle due to poor maintenance and the inadequate training of WWTW staff. GIZ, the South African Local Government Association (SALGA) and the DoE are currently discussing the feasibility of generating electricity from biogas, as an energy-efficiency intervention for WWTW in South Africa.

4.3.2.3. Small-scale biogas

The business case for biogas from animal husbandries, such as abattoirs, has emerged as a real short-term opportunity, due to the fact that:

- The energy (heat and electricity) generated can be used on site.
- The facilities can achieve cost savings through avoiding the costly disposal wastes generated, as these are generally considered hazardous. Moreover, the waste management classification legislation published last year requires the safe disposal of, and submission of disposal certificates for, all hazardous wastes (e.g. contaminated blood and/or animal carcasses). This has resulted in higher disposal costs for abattoirs.

¹⁷ Cape Advanced Engineering project in Darling - for further details refer: <http://www.cae.co.za/Projects/>

¹⁸ Bio2Watt project in Bronkhorstspruit - for further details refer: [http://www.bio2watt.com/bio2watt%E2%80%99s-bronkhorstspruit-biogas-plant-\(pty\)-ltd.html](http://www.bio2watt.com/bio2watt%E2%80%99s-bronkhorstspruit-biogas-plant-(pty)-ltd.html)

- GreenCape is focusing on supporting small to medium biogas project developers by unlocking barriers and ensuring these projects achieve financial close.

4.4. Opportunities in Western Cape municipalities

The Drakenstein, Stellenbosch and CCT municipalities have all undertaken, or commenced with, individual Section 78 processes to assess the different service delivery mechanisms for the provision of alternative waste management. This processes illustrates an increasing focus on sustainable waste management and, in particular, on organic waste treatment.

The process provides opportunities for traditional waste management companies, as well as opportunities to provide services to enable and support the development of alternative waste management (e.g. local manufacturing of piping and instrumentation for digesters, servicing of engines for electricity generation, etc.).

Drakenstein has completed its Section 78 process, and the municipal council has approved the provision of waste management services via an external delivery mechanism in the form of a public-private partnership (PPP). This has seen the appointment of a private partner to manage the landfill and to develop a WtE project. The EIA for the 12.5 MW¹⁹ WtE facility commenced in 2014, and an environmental authorisation is expected by December 2015 (GreenCape 2015).

Stellenbosch initiated its Section 78(3) process in May 2015, and this is expected to be complete by December 2015. The potential projects that the municipality is looking at (with potential to outsource to external service providers) include:

- **landfill gas to energy** (+/-R32 million investment) — feasibility study already done;
- **community composting** – with a particular focus in informal areas (difficult to access for collection of household waste);
- **construction of a drop-off site in Franschhoek** to enable recycling and composting (possibly a small-scale anaerobic digester in Franschhoek as well);
- **organic waste management** (anaerobic digestion) at Klappmuts waste transfer station;
- **upscaling of a pilot brickmaking venture** from clay and builders' rubble at the Devon Valley landfill site, and other possibilities for the diversion of builders' rubble;
- **pilot materials recovery facility** within the municipality.

The CCT is in the process of procuring a transaction advisor to oversee the procurement of alternative waste management services through PPPs. Its Section 78 process highlighted the following projects:

- **Three potential landfill gas projects** at three different locations (Vissershok, Bellville South and Coastal Park). These have been registered under the Clean Development Mechanism of the United Nations Framework Convention for Climate Change.
- **One wastewater sludge treatment project** (Northern Works Biosolids Project) to produce electricity and heat from biogas (3 MWe).
- **Two biomass, solid organic waste treatment** (such as anaerobic digestion) **or mechanical biological treatment facilities.**
- **Three potential integrated waste management sites**, with the recovery of high-value recyclables.

¹⁹ The 12.5 MW will comprise of a 10 MW direct combustion facility and a 2.5 MW anaerobic digestion plant.

5 – Funding and incentives

There is a range of funding solutions, either focused on, or available to greentech manufacturers and service companies, as well as those who use such services. These cover Development Finance Institutions, local public and private sector financiers and investors, and a considerable range of tax incentives.

According to the KPMG Green Tax Index, South Africa ranks 13th out of 21 countries to use tax as an incentive to drive the green growth agenda (ahead of Australia, Singapore and Finland). As well as understanding the various incentive and funding options available to them, investors and suppliers of greentech can also benefit from understanding those available to their customers or clients, as these can influence the viability and attractiveness of their products and projects.

Table 5 demonstrates a wide variety of these funding solutions. It is not exhaustive, but intends to be indicative of some of the more green-focused funds or incentives available, and provide potential leads or starting points to exploring various options. Further to those below, the full range of government investment incentives can be found at www.investmentincentives.co.za

5.1. Manufacturing incentives

Department of Trade and Industry (DTI) special economic zone (SEZ) programme aims to increase industrialisation, economic development and job creation around the country. More specifically, the proposed Upington Solar Corridor SEZ (Northern Cape) and Atlantis Greentech SEZ (Western Cape) focus on solar energy generation and greentech manufacturing respectively.

They provide significant incentives to manufacturers, IPPs, and other players in the relevant value chains.

These development zones make ideal locations for the manufacturing of components that contribute towards local content. An example of this is the Gestamp Renewable Industries (GRI) wind tower manufacturing facility set up in Atlantis, Cape Town. Atlantis has also seen companies such as Skyward Windows and Kaytech expand to include green product lines, and local manufacturing of wind tower internals is expected soon.

The dti has proposed a number of incentives to attract investors into the proposed SEZs, which include:

- **Reduced corporate income tax rate:** qualifying companies will receive a reduced corporate tax of 15%, instead of the current 28% headline rate.
- **Employment Tax Incentive (ETI):** aimed at encouraging employers to hire young and less-experienced work seekers. It will reduce the cost to employers of hiring young people through a cost sharing mechanism with government.
- **Building allowance:** qualifying companies will be eligible for an accelerated depreciation allowance on capital structures (buildings). This rate will equal 10% per annum over 10 years.

- **VAT and customs relief:** companies located within a customs-controlled area (CCA) will be eligible for VAT and customs relief as per the relevant legislation (dti 2015).

Other incentives available to investments into a designated SEZ will include:

- 12I Tax Allowance Incentive
- One-stop-shop facility within designated SEZ area
- SEZ fund for infrastructure development within the designated area.

Within Atlantis, the City of Cape Town has made vast tracts of land available at low cost

for purchase or lease by greentech companies through an accelerated land disposal process. An application has now also been submitted by the Western Cape Provincial Government for the entire Atlantis Industrial area to be declared a Greentech SEZ, a decision on which is expected in the first quarter of 2016. GreenCape's Atlantis SEZ team can assist with information, and facilitate access to permits, licenses, planning and development approvals, incentives and finance. It is also worth noting that the dti has been willing to assure investors that investing prior to SEZ designation will not disqualify them from receiving benefits once the zone is designated.

Table 5: List of funding solutions

Funding solution	Funding instrument	Details
Development Finance		
International Finance Corporation (IFC)	Loan, Equity	www.ifc.org
European Investment Bank (EIB)	Loan	Greater than R0.25 million
SouthSouthNorth / DBSA: Sustainable Settlements Facility (SSF)	Grant, Subsidy, Rebate	www.southsouthnorth.org/sustainable-settlements-facility-ssf/
African Development Bank: Sustainable Energy Fund for Africa	Grant, Technical assistance, Equity	Grant for projects with total capital investments in the range of USD 30-200m. Equity for IPPs with an ideal size of between 5 and 50 MW and a commitment per project of between USD 10-30m.
United Nations Development Programme (UNDP): Global Environmental Facility (GEF)	Grant	Up to USD 50 000
Renewable Energy and Energy Efficiency Partnership (REEEP)	Grant	www.reeep.org
UK Prosperity Fund Programme	Grant	www.gov.uk/guidance/prosperity-fund-programme
German Federal Ministry of Environment: International Climate Initiative (IKI)	Grant	www.bmub.bund.de/en/topics/climate-energy/climate-initiative/general-information/

Funding solution	Funding instrument	Details
German International Cooperation Agency (GIZ)	Feasibility studies	Bioenergy
Public Sector Funding		
Western Cape Government: Cape Capital Fund	Grant	50% of approved intervention
Eskom: Integrated Demand Management	Rebate	www.eskom.co.za/sites/idm/Pages/Home.aspx
Industrial Development Corporation: Green Energy Efficiency Fund	Loan, Technical support	R 1-50 m
Development Bank of South Africa: Green Fund	Grant, Loan	Green Cities and Towns; Low Carbon Economy; Environmental & Natural Resource Management.
dti: Critical Infrastructure Programme (CIP)	Grant	10% to 30% of the total qualifying infrastructural development costs, up to a maximum of R50 million
dti: MCEP - industrial financing*	Loan	Pre-and post-dispatch working capital facility of up to R50m at a fixed interest rate of 4% over a four-year term
dti: MCEP - production incentive*	Grant	Up to 25% of the manufacturing value added
dti: Manufacturing Investment Programme (MIP)	Grant	Investment grant of 30% of the investment cost of qualifying assets for new or expansion projects below R5 million. Investment grant of between 15% to 30% of the investment cost of qualifying assets for new or expansion projects above R5 million.
Department of Small Business Development (DSBD): Co-operative incentive scheme (CIS)	Grant	R0.35 million
Municipal Infrastructure Grant (MIG)	Grant	www.westerncape.gov.za/general-publication/municipal-infrastructure-grant
Recycling and Economic Development Initiative of South Africa (REDISA)	Grant	Infrastructure and set-up costs for tyre recycling
South African National Biodiversity Institute: Global Adaptation Fund	Grant	www.sanbi.org/biodiversity-science/state-biodiversity/climate-change-and-bioadaptation-division
Private Sector Funding		
ABSA	Loan, Rebate	15% of project

Funding solution	Funding instrument	Details
Nedbank	Loan	www.wwf.org.za/what_we_do/wwf_nedbank_green_trust/
FNB	Loan	www.fnb.co.za/home-loans/getting-a-building-loan.html
Standard Bank	Loan	www.standardbank.co.za/standardbank/
Old Mutual Infrastructural, Developmental and Environmental Assets Managed Fund (IDEAS)	Loan, Equity	ww2.oldmutual.co.za/old-mutual-investment-group/boutiques/alternative-investments/our-capabilities1/infrastructure/our-products/ideas-managed-fund
Business Partners	Equity, Loan	R0.5-30 million
Edge Growth	Equity, Loan	R1-20 million
Inspired Evolution: Evolution One Fund	Loan	>R10 million
Atlantic Asset Management	Loan	>R15 million
POLYCO	Loan	Infrastructure for plastics: high-density polyethylene (PE-HD), linear/low-density polyethylene PE-LD/LLLD) and polypropylene (PP)
PETCO	Subsidy, Awareness & Training, Equipment	Infrastructure for polyethylene terephthalate (PET). Category A: R30m-R40m per annum, Category B: R4m per annum.
Tax Rebates		
12B accelerate depreciation incentive	Tax rebate	Accelerated depreciation of renewable energy investments at a rate of 50:30:20, as well as certain machinery, plants, implements, utensils and articles used in farming or production of renewable energy
12L energy efficiency incentive	Tax rebate	95c/kwh deduction on energy saved
12I tax allowance incentive for manufacturing investments	Tax rebate	35-55% or R550-R900m for greenfield projects 35-55% or R350--R550m for brownfield projects
Capital development expenditure	Tax rebate	Tax deduction for capital expenses incurred for farming operations (including game farming) which focus on sustainable agriculture.
37B environmental expenditure	Tax rebate	Deduction in respect of environmental expenditure for assets related to environmental treatment and recycling, waste disposal, and post-trade environmental expenses.
37C environmental maintenance expenditure	Tax rebate	Deduction in respect of environmental conservation and maintenance.

*The MCEP has been temporarily suspended owing to funding shortfall in 2015" to "Over R5 Billion was originally set aside for this programme and is now fully committed. A new application window will be opened in April 2016 pending availability of funds. All other incentives of the department will continue as normal.

6 – The Western Cape: Africa's growing greentech hub

The Western Cape is a world-class investment destination offering prime locations, modern infrastructure, a skilled workforce, low operational costs and an abundance of natural resources. It is a sought-after place to live, with unrivalled natural beauty, vibrant culture, excellent schools and universities, and an outstanding quality of life. It is also a prime location for green business.

The Cape Town area has emerged in the last five years as South Africa's renewable energy and cleantech hub, with a critical mass of the leading local and global companies already present, including numerous original equipment manufacturers. The province has a strong local presence of major professional services firms and financiers, as well as a supportive government that has made ease of doing business and the green economy key priorities.

Coupled with these, is a strong and rapidly growing market for green technology and services in South Africa and the region. Some of the major market opportunity areas in the next five years are outlined in Figure 9. Notably, on utility scale wind and solar projects there is robust South African and African demand, with ±R200bn/US\$20bn invested since 2011 and >1GW capacity procured per annum.

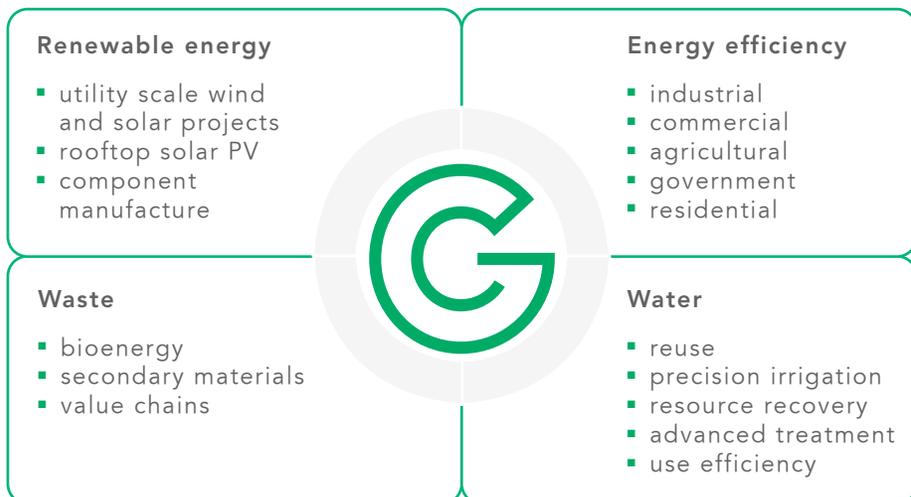


Figure 9: Major market opportunity areas in the Western Cape (2015 – 2020)

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

- **GreenCape**, providing dedicated support and market intelligence to green economy sectors
- **Wesgro**, the Investment and Trade promotion agency for the Western Cape
- **SAREBI**, a business incubator providing non-financial support to green entrepreneurs
- **SARETEC**, offering specialised industry-related and accredited training for the wind and solar industries

The region's four universities - University of Cape Town, Stellenbosch University, University of the Western Cape, and the Cape Peninsula University of Technology - underpin all of this with comprehensive research and development (R&D) capabilities and dedicated green economy skills programmes.

Finally, as discussed in Section 5, the City of Cape Town established a greentech manufacturing hub in Atlantis in 2011 in response to the government's focus on localisation of manufacturing as part of the DoE's REIPPP. A promising range of investment incentives are available in the proposed Atlantis Greentech SEZ, including numerous financial and non-financial incentives, discounted electricity and rapid turnaround on development applications (see Section 5).



7 – GreenCape's support to businesses and investors

GreenCape is a non-profit organisation that was established by the Western Cape Government and CCT to support the accelerated development of the local green economy – low carbon, resource efficient and socially inclusive – and help position the Western Cape as the green economic hub of Africa.

We assist businesses in this space to remove barriers to their establishment and growth by providing 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

Since inception in 2010, GreenCape has grown to a multi-disciplinary team of over 40 staff members, covering finance, engineering, environmental science and economics. We have facilitated and supported R13.7bn of investments in renewable energy projects and manufacturing. From these investments, more than 10 000 jobs have been created.

Our MIRs form part of a working body of information generated by sector desks and projects within GreenCape's three main programmes – energy, waste and resources. Figure 10 shows the different focus areas within each of our programmes.

More about GreenCape's work in the waste sector

GreenCape's Waste Programme was established in 2010 with a focus on encouraging the utilisation of waste as a resource, supporting the development of a thriving, legally compliant and

labour absorptive secondary materials industry in the Western Cape. Over time, the ambition is to move towards closed loop recycling, unlocking the high value opportunities that exist within manufacturing, industry and agriculture, and transitioning from a waste economy to a materials management economy. In 2015 we focused on:

Broad sector support: GreenCape's Waste Sector Desk aims to be a hub of information to help industry understand and foresee challenges and opportunities within the waste economy, which in turn facilitates informed decision making. The desk also hosts a range of events to disseminate information and promote discussion around particular challenges facing the sector, to help identify interventions that can address these challenges.

Specific projects: In 2013, GreenCape established the Waste Economy Project with the following aims:

- **Map and demystify the policy and regulatory landscape**, consolidating information on the powers/functions of the three levels of government, as well as other key stakeholders.
 - The Alternative Waste Treatment Guide²⁰ was launched in 2015 and provides the waste sector with an overview of the processes for developing an alternative waste treatment project, with a focus on technology types, and the relevant municipal processes and legislative requirements pertaining to a technology type.

²⁰ The guide is available from <http://awtguide.environment.gov.za/>

Develop and demonstrate decision support tools to enable integrated municipal waste management

- In 2015 we continued with the development of our integrated waste management (IWM) decision support tool, which assists municipalities in their planning and investment decision-making.

Development of value chains to support use of secondary materials in commercial and industrial wastes

- In 2015 we prioritised further research on the C&DW economy (see Section 4.2). C&DW constitutes a large portion of waste disposed at landfill (up to 40%) and offer significant opportunity for re-use as secondary materials as well as job creation.

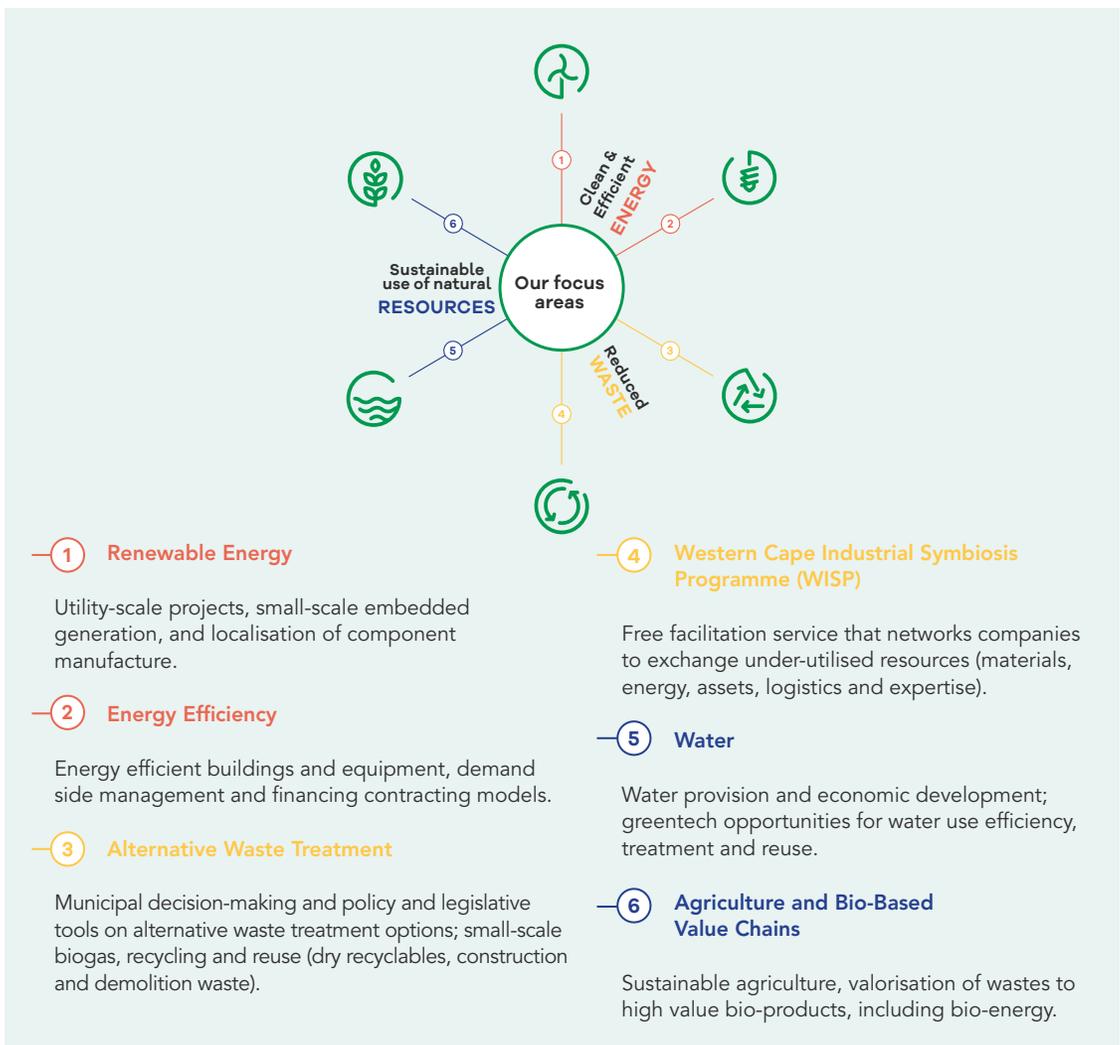


Figure 10: GreenCape’s focus areas

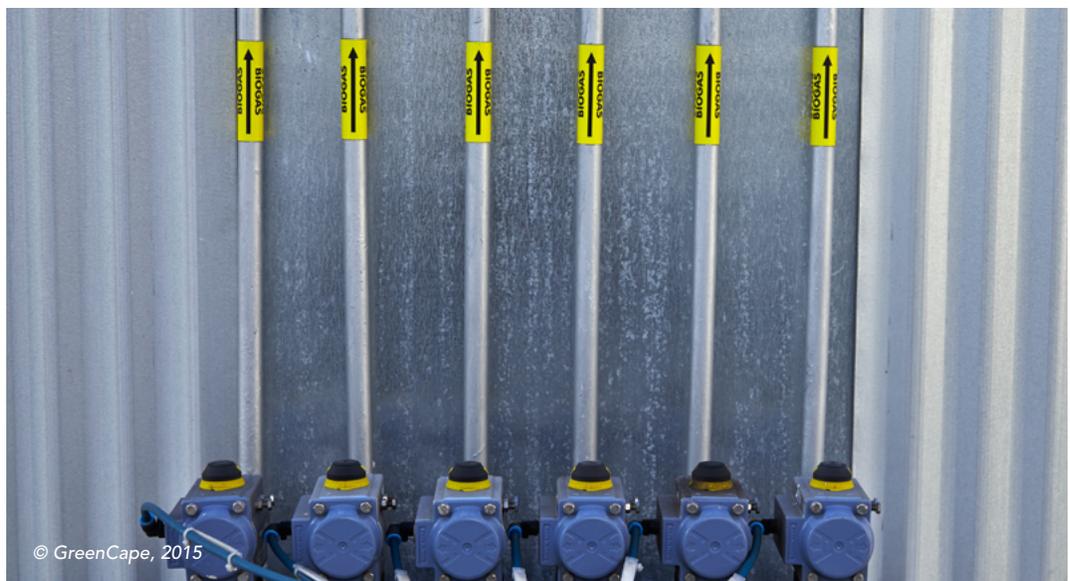
Western Cape Industrial Symbiosis Programme (WISP)

Industrial symbiosis is a resource efficiency approach where one company's unused or residual resources are used by another, for mutual business benefit, leading to a more resource efficient and lower carbon economy. The WISP is a free facilitation service that networks companies wishing to trade their under-utilised resources, including materials, energy, assets, logistics and expertise. Since its inception in 2013, WISP has developed a database of diverse businesses and resources and already enabled significant cost savings to its members and created new business opportunities and jobs.

Benefits of becoming a GreenCape member

We currently have over 600 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.

To register as a member, please visit our website, www.greencape.co.za



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Appendix A: Producer responsibility organisation contact list

Name	Recycling related function	Tel. No.	Website and e-mail
Plastics SA	Umbrella body for the plastics industry. Promotes recovery of plastics for recycling	+27 (0)11 314 4021	www.plasticsinfo.co.za enquiries@plasdfed.co.za
The Glass Recycling Company	Promote the recovery and recycling of used glass containers	+27 (0)11 803 0767	www.theglassrecyclingcompany.co.za info@theglassrecyclingcompany.co.za
PETCO	Promote recycling of post-consumer Polyethylene Terephthalate (PET) products	0860 137 738	www.petco.co.za info@petco.co.za
Collect-a-Can	Recovery of steel beverage and other cans for recycling	+27 (0)11 466 2939	www.collectacan.co.za info@collectacan.co.za
e-Waste Association of SA	Platform for recycling of electrical and electronic waste in South Africa	+ 27 (0)31 575 8119	www.ewasa.org info@ewasa.org
National Oil Recycling Association of South Africa (NORA-SA)	Co-ordinates and facilitates the environmentally responsible recovery, collection, transportation, storage, processing and use of used lubrication oils.	021-448-7492	www.norasa.co.za usedoil@iafrica.com
Packaging SA	Umbrella body for the packaging industry	012-001-1914	www.packagingsa.co.za Charles@packagingsa.co.za
Polystyrene Packaging Council	Collection and recycling of polystyrene packaging		www.polystyrenepackaging.co.za adri@polystyrenepackaging.co.za
POLYCO	Collection and recycling of polystyrene packaging	021-531-0647	www.polyco.co.za mandy@polyco.co.za
Paper Recycling Agency of South Africa (PRASA)	Represents processors and manufacturers of recycled paper fibre.		www.pamsa.co.za ursula.henneberry@pamsa.co.za
ROSE Foundation	Collection, storage and recycling of used lubricating oil	+27 (0)21 448 7492	www.rosefoundation.org.za usedoil@iafrica.com

