

# Market Intelligent Report: Waste Economy



greencape

Gracia Munganga,  
Waste Sector Manager

Sinethemba Mali-Bolo,  
Waste Sector Officer

2014

# Table of Contents

Table of Contents.....	1
List of Figures .....	2
List of Tables .....	3
Overview of the Waste Economy in South Africa / Introduction .....	4
Historical and Regulatory Framework of Waste Management in South Africa.....	4
Regulatory changes.....	6
National waste roadmap.....	6
Waste tyres .....	7
Western Cape industrial symbiosis programme (WISP) .....	7
Recycling industry .....	7
Waste-to-energy .....	8
Western Cape Context.....	9
Overview of the waste related projects in municipalities .....	9
City of Cape Town .....	10
Drakenstein municipality .....	11
Eden District (DM) and George municipality .....	11
Stellenbosch municipality .....	11
Waste Economy Challenges for Industry .....	12
Securing your feedstock agreements .....	12
Recovery rates and separation at source .....	12
Electricity and gas usage agreements and tariffs .....	13
Legal authorisation backlog .....	13
Future Outlook of Waste Market.....	13
References .....	14
Appendix .....	15

## Acknowledgements

GreenCape would like to acknowledge the contribution of the following people without which gathering information for this report would not have been possible:

- Special thanks to Eddie Hanekom and his team (from the Department of Environmental Affairs and Development Planning)
- Sean Thomas from Bio2watt
- Saliem Haider (Stellenbosch Municipality)
- Barry Coetzee (City of Cape Town)
- Ronald Brown (Drakenstein Municipality)
- Fernel Abrahams and Jim Petrie (Department of Economic Development and Tourism)
- Peter Silbernagl (Mott McDonalds and PD Naidoo & Associates)

DRAFT

## List of Figures

Figure 1: Overview of the waste sector regulatory framework in South Africa (Godfrey <i>et al.</i> , 2012)..	5
Figure 2: Average recycling rates in South Africa (PACSA, 2012) .....	8
Figure 3: Overview of legal authorisation process required to develop a biogas project (Adapted from Thomas and Feldner; 2013) .....	15

## List of Tables

Table 1: Overview of waste economy companies based in the Western Cape	Error! Bookmark not defined.
Table 2: Academic Insitutions in the Waste Economy Research .....	21

DRAFT

## **Overview of the Waste Economy in South Africa / Introduction**

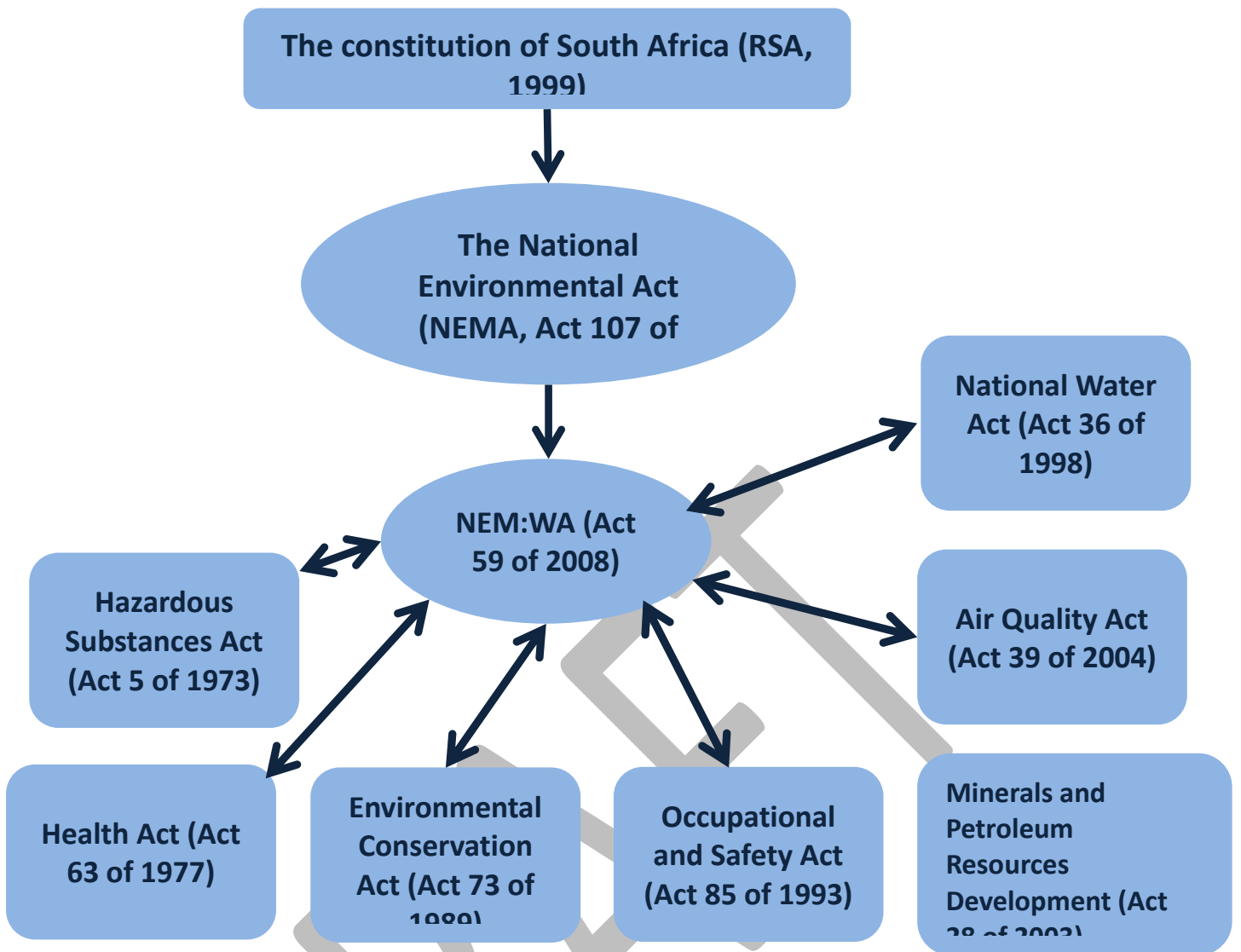
The waste economy in South Africa is estimated at R15.3 billion (~ 0.51% of the GDP) including both the public and private sectors according to a survey conducted by the Council for Scientific and Industrial Research (Godfrey *et al.* 2012). The waste industry is dominated by large players whose main activities revolve around offering consulting services and end of pipe waste management services/products such as collection, sorting, recycling, and disposal).

Over the last decade, the number of companies in the waste sector has increased significantly due to the changes implemented by the National Department of Environmental Affairs (DEA) reflected in the National Environmental Management: Waste Act (NEM:WA, Act 59 of 2008). NEM:WA shifts the focus from end of pipe to cradle to cradle solutions to include waste minimization through recycling and recovery of valuable material from the waste streams. The National Waste Management Strategy (NWMS) published in 2011 has set ambitious waste economy targets to establish 2600 small and medium enterprises (SMEs) and create 69 000 jobs in the South African by 2016.

## **Historical and Regulatory Framework of Waste Management in South Africa**

The waste sector in South Africa has been guided by the White Paper on Integrated Pollution and Waste Management (IP&WM) published in 2000, the National Environmental Management: Waste Act, 2008 (NEM:WA, Act 59 of 2008) and the National Waste Management Strategy (NWMS) amongst other legal requirements for the private sector triggered depending on the waste project being developed as presented in Figure 1 .

Moreover, the Municipal Structures Act (Act 117 of 1998), Municipal Systems Act (Act 32 of 2000) and Municipal Finance Management Act (Act 56 of 2003) which govern the municipal procurement processes in South Africa are also triggered for projects undertaken with the municipality as a stakeholder.



**Figure 1: Overview of the waste sector regulatory framework in South Africa (Godfrey *et al.*, 2012)**

It is noteworthy that there are a number of additional applicable by-laws across most municipalities in South Africa. The only municipalities who have not introduced any by-laws in the Western Cape thus far are: Stellenbosch, Witzenberg, Laingsburg, Prince Albert, George, Kannaland, Oudtshoorn, Swellendam and Swartland. Please refer to Page 11 for more details about waste management by-laws in the Western Cape.

# Waste Economy Regulatory Update

This section presents the key projects and changes implemented in the waste legislation over the last 12-18 months in South Africa

## Regulatory changes

National Environmental Management: Waste Amendment Bill was published in July 2013 and introduced to Parliament in August 2013. The proposed amendments to NEM:WA seek to: Change the definition (Section 38 in NEM:WA) and classification of waste where 'any portion of waste, once re-used, recycled [and] or recovered, ceases to be waste'. This is a positive shift towards attributing value to waste, and might eliminate the need to obtain a waste license depending on the waste thresholds; as well as qualify for a basic assessment rather than a full environmental impact assessments (EIA).

- Include the disposal of animal carcasses in NEM:WA , which was previously excluded
- Require industry sectors, with the supervision of Provincial Departments, to develop waste management plans

Additional changes included in the regulatory framework in the waste sector are the development of: Listed Activities under the NEM:WA (GN 921 of 2013, November 2013), National Norms and Standards for Storage of Waste (November 2013), Draft Norms and Standard for the assessment of disposal of waste in landfills (August 2012), and Draft Norms and Standards for the extraction, flaring and recovery of landfill gas (Gazette No 34416-Notice 434, promulgated in November 2013). Further clarity however is required to understand the exact implications on the existing companies handling waste, and how these amendments will be applied in the Western Cape. More clarity is expected before the end financial year i.e. March 2013. For more information, refer to: Waste Information Today (an online journal run by the national Department of Environmental Affairs, <http://sawic.environment.gov.za/>). Registration is done online, and free of charge.

## National waste roadmap

The Department of Science and Technology (DST) is developing a *National Waste Research, Development and Innovation Roadmap for South Africa* with the Council for Scientific and Industrial Research (CSIR). The project duration is scheduled for 10 years, and will be implemented in three main phases. These are: (i) developing the first baseline of the South African waste economy, (ii) identifying specific instruments (financial, policy, institutional, etc) to boost the waste economy and required skills and (iii) implementing the strategies identified in the two previous stages. It is expected that resources to implement the roadmap will be channelled directly through the DST and its agencies (e.g. the Technology Innovation Agency) to foster innovation in and grow the sector in SA. More background on the project can be found on the DST's website at: <http://www.wasteroadmap.co.za/index.php>

## Waste tyres

The Tyre Industry Waste Management Plan-developed by the Recycling Development Initiative of Southern Africa (REDISA)-was approved earlier this year. There are currently 10 millions waste tyres generated annually in South Africa, the plan aims to collect a R2.30/kg levy from tyre manufacturers, importers and dealers; that will be used to subsidise and create a sustainable tyre recycling industry in South Africa (<http://www.redisa.org.za/faq/>). All tyre recyclers need to register with REDISA between the periods of July 2013-April 2014.

The key criteria are 51% BBEE shareholding and being able to promote job creation and environmental welfare. It appears (based on REDISA's briefing presentation to recyclers in November 2013) that the bulk of opportunities will be for tyre derived fuels (TDLs) in Gauteng, Northern and Eastern Cape. The existing facilities in the Western Cape are able to provide enough capacity to deal with the tyres in the Province. For more information contact REDISA directly. (Contact details: Vish Gianpersad , e-mail: [vish.gianpersad@redisa.org.za](mailto:vish.gianpersad@redisa.org.za) ).

## Western Cape industrial symbiosis programme (WISP)

The Western Cape Industrial Symbiosis Programme (WISP) was set-up in 2013 by the Western Cape green economy steering committee, under the Department of the Premier. WISP aims to develop mutually profitable links between companies from all industrial sectors, so that underutilised resources such as energy and water, and/or materials from one company can be recovered, reprocessed and re-used by others. The programme is based on the highly successful national programme in the UK (NISIP), which demonstrated that industrial symbiosis has the potential to significantly reduce industrial and commercial waste and comprehensively lessen the adverse environmental impacts of business.

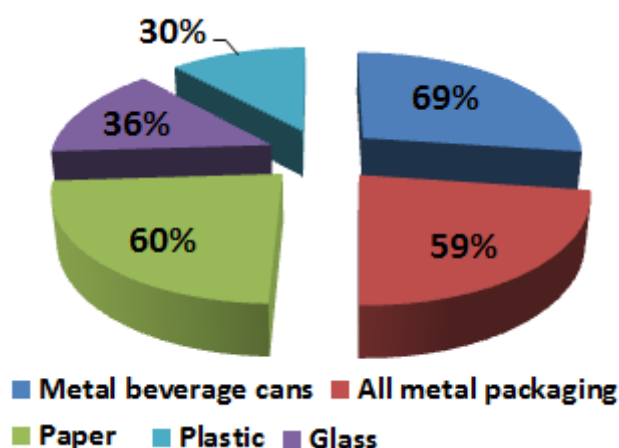
The WISP team has hosted a number of successful workshops over the 2013 financial year, which has already resulted in costs and resources saving opportunities for the companies involved. For more information on the upcoming workshop and the programme, visit WISP's website: <http://www.westerncape.gov.za/110green/initiatives/list/western-cape-industrial-symbiosis-programme> and/or contact the WISP facilitators at GreenCape ([joshua@green-cape.co.za](mailto:joshua@green-cape.co.za) , [sarah@green-cape.co.za](mailto:sarah@green-cape.co.za) )

## Recycling industry

The average recycling rate in South Africa is 19.6%, compared to a global average of 23.3% (McKenzie, 2012).The recycling industry is well established in South Africa, and has existed for over 20 years (i.e. there are over 180 recyclers across the country). The main materials recycled are packaging wastes i.e. metals, paper, glass and plastics as illustrated in Figure 3 below. There are seven main groups of polymers, of which three-four are mainly recycled due to their higher market demand. These are namely: polyethylene terephthalate commonly called 'PET' and labelled 'No.1', high density polyethylene (No.2), low density polyethylene (No.4.) and polypropylene (No. 3).

The bulk (i.e. 80%) of recyclers use materials recovered directly from the landfills (supplied mostly from waste pickers nationwide and sold to either a depot/buy-back centre/large scale collector), Pretorius (personal communication, 2013). The remainder of the waste stream is generally landfilled since options such as energy and chemical recovery are not widely used to date.





**Figure 2: Average recycling rates in South Africa (PACSA, 2012)**

It is expected that the ambitious waste minimization targets, as well as the job creation targets in the National Waste Management Strategy (NWMS) will act as an additional incentive to increase the volumes of waste recovered, as well as the creation of added value products from recycled materials. For example, the South African Plastic Recyclers Association (SAPRO) plans to achieve 40% recycling rate by 2014, (PACSA, 2011)

More information on the recycling industry is available through the National Recycling Forum (<http://www.recycling.co.za/index.html>), and the respective industry associated (refer to Appendix 4)

### **Waste-to-energy**

The Department of Energy (DoE) has increased tariffs and quota allocated for biogas, landfill gas and biomass from R 0.60, R 0.80 and R1.07/kwh to R 0.90, R 0.94 and R1.40/kwh respectively in the Renewable Energy Independent Power Producers (REIPPPs). The Request for Proposal (RFP) for small projects between 1-5 MW was also issued in September 2013. The bidding process will occur in four main stages before the selection of the preferred bidders. A total capacity of 200 MW for all RE technologies has been allocated over two cycles, waste-to-energy included. The bidding documents are available at a nominal fee of R5000. The first bid closed on the 30<sup>th</sup> October 2013, and the second bid submission date will be on the 10<sup>th</sup> of February 2014. More information is available on the DoE's REIPP website (<http://www.ipprenewables.co.za/>).

The Department of Environmental Affairs plans to develop a National Waste to Energy Strategy to investigate the greenhouse gases mitigation potential that can be achieved in South Africa, in line the country's commitments to the Kyoto protocol (Letete, 2013).The project is however in its conception stage.

In the Western Cape, the Department of Environmental Affairs and Development Planning (DEA&DP) has processed over a dozen of waste licenses applications for small scale waste-to-energy projects especially biogas for farms, and abattoir wastes.

The growth of small scale biogas projects in South Africa is a result of a combination of stricter environmental disposal legislation, increasing landfill fees coupled with the premium tariffs offered by Eskom (R1.20/kwh) as part of the Standard Offer Programme (SOP) last year in 2012. Unfortunately SOP was oversubscribed and terminated by Eskom earlier this year until further notice. Appendix 2 presents a list of waste-to-energy planned in the province.

## Western Cape Context

The bulk (80% on average) of the Western Cape's waste is generated between the City of Cape Town, Stellenbosch and Drakenstein (IWMPs-DEA&DP, 2012). The main issues faced by municipal managers are increasing pressures from limited remaining landfill airspace across the province. The average lifespan of existing landfills is estimated at 8 years, with less than 3 years left for Stellenbosch municipality. Municipalities, and respective waste management facilities are widely spread, which results in high transportation costs. As a result, while any large scale centralised technology/project can be feasible near the metro due to scale and availability of large quantities of waste, a decentralised approach might be more suited for some district municipalities/municipalities.

One of the main objectives of *The Western Cape Green Economy Strategic Framework* (published earlier in 2013) is to achieve resource efficiency by minimizing the amount of waste generated in agricultural and industrial processes as well as creating economic opportunities from our current waste streams. ([https://www.environment.gov.za/sites/default/files/docs/westerncape\\_greenecomony\\_strategyframework.pdf](https://www.environment.gov.za/sites/default/files/docs/westerncape_greenecomony_strategyframework.pdf)):

Moreover, the Department of Economic Development (DED&T) and the Department of the Premier are conducting a Regulatory Impact Assessment (RIA), and a mapping of the waste economy to benchmark and understand the size of the industry in the province, and targeted policy interventions required to support businesses. For more information contact Charline Mouton (from DED&T, e-mail: [Charline.Mouton@westerncape.gov.za](mailto:Charline.Mouton@westerncape.gov.za) ) and Taryn van der Rheede (DoP, e-mail: [taryn.vanderheede@westerncape.gov.za](mailto:taryn.vanderheede@westerncape.gov.za) ).

It is important to note that the Waste Licensing Unit within the Department of Environmental Affairs and Development Planning (DEA&DP) has worked relentlessly at simplifying the process to secure environmental authorisations for industry and has committed itself to assist industry develop a waste economy in the province. For any enquiries contact directly the DEA&DP through Eddie Hanekom (e-mail: [eddie.hanekom@westerncape.gov.za](mailto:eddie.hanekom@westerncape.gov.za) ) and/or Lance McBain-Charles (e-mail: [Lance.McBain-Charles@westerncape.gov.za](mailto:Lance.McBain-Charles@westerncape.gov.za) ).

## Overview of waste related by-laws

The purpose and content of by-laws varies across different municipalities. For example the impact of City of Cape Town's require appear to require more to comply with the municipalities ' rules compared to the Berg River's by-law for example. The section below presents an overview of the impacts of the by-laws implemented across the province mostly applicable to the waste industry. These are:

- A waste generator must make use of the waste removal services of the city or its accredited service providers

- Industrial waste generators must contract with an accredited service provider for collection and disposal for a licensed facility. The city of Cape Town requires industrial waste generators to submit integrated waste management plans, and comply with rules set for generation, minimization, storage, recycling, collection and disposal of such waste.
- All companies doing transport of waste, handle, process, treat and dispose of waste are/can be required to submit monthly to the municipality
- All the persons collecting or removing waste must have a contract signed with the waste authority for the collection and removal.
- Waste generators from (i.e. commercial, industrial, business, events, building rubble wastes) across the City of Cape Town are required to register with the City and generate integrated Waste Management Plan (unless granted an exemption from the solid waste director).
- Disposers/owners of building rubble waste shall provide a monthly report of the quantities disposed

## Overview of the waste related projects in municipalities

### City of Cape Town

The City of Cape Town has opened a tender/call for proposal to appoint a transactional advisor (TA), whose main role will be to advise and develop alternative waste management projects across the metro. The call for proposal closes in January 2014. The above forms part CoCT's longer vision to upgrade its integrated waste management in the future. A feasibility study was completed as part of the Section 78 assessment three years ago.

The report shows there are currently 8 sites, and 11 potential alternative waste management projects the city will develop in the future, such as anaerobic digestion (AD) and landfill gas extraction.

Also, the City of Cape Town has completed the registration of its landfill gas project under the Clean Development Mechanism (CDMs) Programme of Activities (PoA) before the window closed for South Africa in 2012.

It is important to note that project boundaries are South Africa and not limited to the City of Cape Town which offers a potential opportunity for other landfill gas projects across South Africa to register under the CoCT's scheme provided the project meets the technical specifications.

### **Drakenstein Municipality**

Drakenstein Municipality is keen to introduce waste-to-energy into their integrated solid waste management plan and aims to develop a zero waste integrated park (using a combination of increased recycling rates, anaerobic digestion and thermal treatment). The Solid Waste Department at Drakenstein has appointed Interwaste as their service provider and is awaiting the Council's approval for a waste-to-energy facility in the area. The service provider be responsible for running of the municipal recycling and management of its landfill site as well as the implementation of the waste-to-energy plant. Jan Palm Consulting Engineers (JPCE) was appointed as the transactional adviser and has been acting as the technical and legal adviser to Drakenstein.

The main challenge for the thermal facility will be securing enough waste to run both an AD and thermal facility unless additional waste is imported from neighbouring municipalities. The contractual agreements between the municipality and the service provider appointed has been structured such that the bulk of the responsibility to secure enough supply of feedstock lies on the private party. Interwaste was appointed to conduct the feasibility study, and National Treasury has worked closely with the municipality to guide them through the required procurement processes to follow.

### **Eden District (DM) and George Municipality**

George Municipality conducted a feasibility study to investigate the biogas potential from its sewage waste. The project- sponsored by GIZ and the South African Local Government Association (SALGA)- formed part of a national programme to understand the biogas potential at four other municipalities. SLR Consulting was appointed as the service provider, and the project ended in November 2013.

The Eden District Municipality is also conducting a feasibility study to look at the potential of a centralised waste-to-energy, and opportunity for regionalisation of integrated waste management facilities at District level. The project is in its conception phase and is expected to be completed in the near future.

### **Stellenbosch Municipality**

Stellenbosch is currently under tremendous pressure to divert waste from its landfills estimated to have airspace for less than 3 years (Interview with Saliem Haider, Solid Waste Manager-Stellenbosch). Stellenbosch Municipality has completed section 1 and 2 of the feasibility study required by the Section 78 of the Municipal Systems Act (No. 32 of 2000). Stellenbosch Municipality will be opening a call for proposal for treatment of organic wastes, and waste minimization at their Klappmuts landfill site in the coming weeks (Haider, 2013). However, a regional approach between the CoCT and Drakenstein Municipality might be more financially feasible for all three municipalities.

## Waste Economy Challenges for Industry

This section is a reflection of the conversations held with industry over the 2012-2013 financial year around the main challenges currently experienced by the waste industry. The information was collated through waste-to-energy working group meetings chaired by DED&T, individual meetings held with recyclers and attendance to the Western Cape Recycling Action Group (RAG) and Waste Minimization Interest Group (WMRIG) meetings.

### Securing your feedstock agreements

Access to municipal solid waste remains a stumbling block for project developers due to constraints in the procurement regulations such as the Municipal Systems Act (MSA, 32 of 2000) and the Municipal Finance Management Act (MFMA, Act 56 of 2003). The MSA, sections 78 (1-3), requires municipalities to conduct a feasibility study if the private sector is involved to determine the costs and impact on the municipal revenue, the benefits to the municipality and future budget projections. These processes can typically extend over a number of years. For example, it took the City of Cape Town two years to complete their Section 78 (3) process, and it is expected to take another two years once the TA is appointed before the City is ready to advertise calls for proposal and project opportunities for waste developers.

The procurement process to be followed around the use of municipal land and/or any other assets for periods longer than three to five years will either require to structure public private partnerships (PPPs) and/or longer term contracts as unsolicited bids. Municipalities are however not encouraged to issue long term contracts (i.e. longer than three-five years) without going through a public participation process. These agreements/contracts can take a number of years to be developed into structured and legal documents, despite the fact that municipalities are allowed through the MFMA (Act 56 of 2006) to apply for concession to extend contractual agreements for periods longer than three years. Most of alternative treatment and waste management projects have a payback period between 10-15 years, and require security of supply (waste) for that period. The inability to secure supply limits the projects' ability to attract investment and funding. The above scenario acts as a disincentive for investors in municipal projects as it is discouraging for willing investors to wait 2-3 years for the issuance of a tender (with no security around return for their investments). There needs to be a balance between promoting fair and transparent business practices at local level, and creating a suitable environment to attract investors (e.g. faster internal processes provision under set conditions). Refer to Figure 3 which shows the main steps of legal authorisations required concerning biogas projects.

### Recovery rates and separation at source

Goal #1 of the National Waste Management Strategy (NWMS) states the following to achieve by 2016: (i) 25% of diversion of recyclables from landfill disposal through re-use, recycling and recovery; (ii) initiate waste separation at source programme in all the metros and large municipalities

; and (iii) implement the industrial waste management plans (IndWMPs) for the tyre, packaging, pesticides and lighting (CFLs) industries. However, many municipalities are simply struggling to integrate waste separation at source as part of their waste management systems due to the high costs of transportation, logistics and infrastructure. Separation at source is still practiced as a pilot project

in municipalities across the Western Cape, with the exception of smaller municipalities such as Knysna which has been implementing a two-bag system for its waste collection system since 1995. Industry association such as PETCO and PlasticSA collect most of their materials from informal waste pickers at the landfill sites. Technology solutions adopted need to handle mixed contaminated waste, as well as source separated waste. The bulk of waste in South Africa is still currently landfilled.

### **Electricity and gas usage agreements and tariffs**

The challenges experienced by project developers are directly linked/related to the complexity of the process required to secure a generator's license and power purchase agreements, as well as the lower tariffs available to developers. The waste-to-energy industry is at its infancy stage as opposed to the relatively better established solar and wind developers. For example, every biogas project is now required to register and obtain a gas user license per the Gas Act (Act No. 48 of 2001). Moreover, electricity generated from waste is currently produced at least R15-20/kwh higher than the bulk electricity price from Eskom. For that reason, project developers can therefore not sell directly to municipalities at a premium price for renewable energy unless permission is obtained from the regulator NERSA.

### **Legal authorisation backlog**

Obtaining a waste license as per NEM:WA and an Environmental Impact Assessment (EIA) typically takes a period of 9-24 months to be issued depending of the type of EIA process which must be followed. Moreover, waste projects might trigger a list of other legislations required such as a water license, land use, air quality etc. All this can easily elongate the project development stage up to five years. It is therefore crucial to appoint an adequate environmental assessment practitioner (EAP) with previous experience in the waste sector, and knowledgeable with the recent changes in the legislation.

The lack of coordination between the different government departments (e.g. DEA, Department of Water, NERSA, municipalities) as well as the delays experienced during the project development phase can result in additional unplanned costs significantly.

### **Future Outlook of Waste Market**

The National Waste Management Strategy has set ambitious targets to establish 2600 small and medium enterprises (SMEs) and 69000 new jobs from the waste sector by 2016. There are significant opportunities to increase recovery of waste, and divert waste from landfills. This would require innovation funding models for such projects, and present an opportunity to increase the contribution of the informal sectors and the private sectors.

Based on the current challenges experienced due to the complex municipal procurement process, it appears small scale and decentralised projects with direct supply from a private party will keep growing as they require shorter project development processes. The growth in the private sector will be faster, which already has been manifested by the number of applications for waste licenses.

## References

Godfrey,L; Muswema, W; Oelefse,S; Roman, H; Mange,M and Nienaber,S.. (2012). South African Waste Sector – 2012. An analysis of the formal private and public waste sectors in South Africa. *A National Waste Research, Development (R&D) and Innovation Roadmap for South Africa: Phase 1: Status Quo.* i

Letete,T. (2013). *Coordination of the Waste Management Flagship programme.* Presentation at the 2013 South African Biogas Industry Association (SABIA) Conference. South Africa.

McKenzie, A. (2012). Plastics recycling in South Africa. Urban Earth

Packaging council of South Africa. (2012). *Links to major Recyclers.* Available: [http://www.pacsa.co.za/index.php?option=com\\_content&view=article&id=12&Itemid=24](http://www.pacsa.co.za/index.php?option=com_content&view=article&id=12&Itemid=24) . Last accessed 08th January 2013.

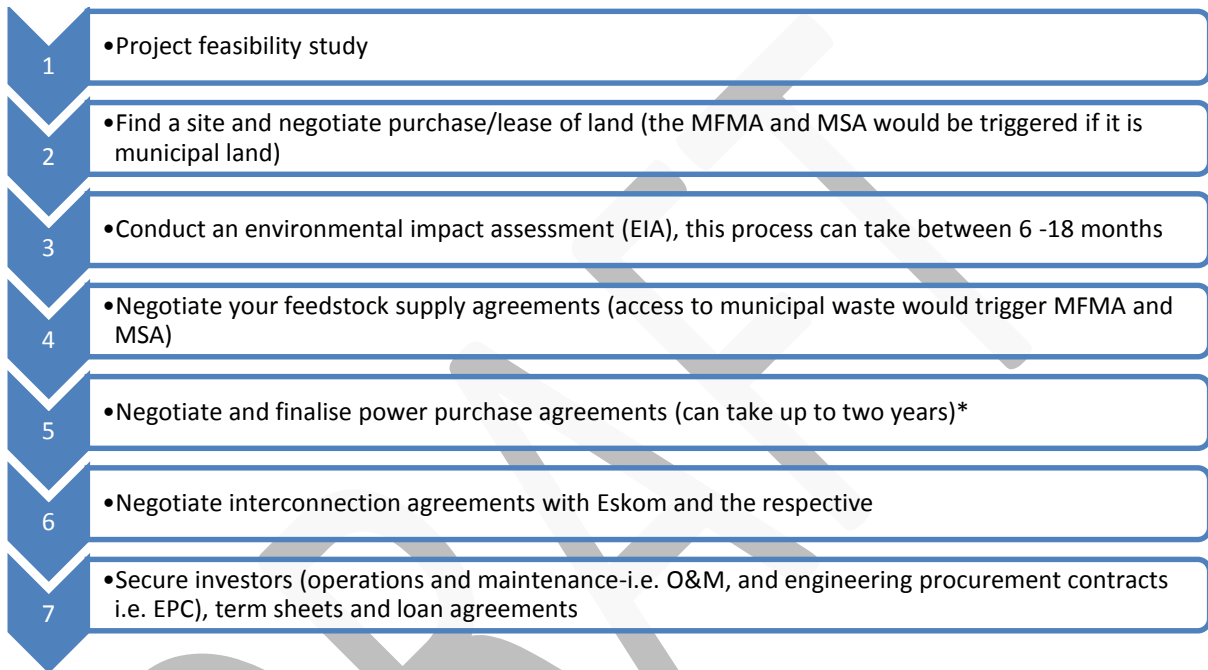
Thomas,S. and Feldner,M (2013). Implementing a biogas project in South Africa: Lessons learnt. Presentation at the 2013 South African Biogas Industry Association (SABIA) Conference. South Africa.

DRAFT

# Appendix

## Appendix 1: Steps to follow for a waste-to-energy project

This section presents a summary of the steps followed by Bio2Watt , a South African biogas project developer that reached financial close to develop the first the first 3 MW biogas project in Bronkhorstspuit, South Africa! The project falls outside of the DoE’s REIPPP and will sell electricity directly to a private user at a premium price. The project took five years to develop, required 56 iterations to the financial model and the IDC provided the bulk of the funding. The total project cost is R135 million, and the project development fees were ~ R6 millions.



**Figure 3: Overview of legal authorisation process required to develop a biogas project (Adapted from Thomas and Feldner; 2013)**

GreenCape congratulates Sean Thomas (MD of Bio2watt) for his project, and wishes to express their gratitude for sharing the valuable lessons learnt during this long journey for biogas/waste-to-energy project developers.



## Appendix 2: List of upcoming W-t-E Projects in the Western Cape

Below is a list of waste-to-energy projects that either (i) have been granted a waste license or, (ii) have applied for one:

### Projects with approved waste licences

- Anaerobic digester (AD) generation of electricity :piggery, Klipheuwel;
- AD - generation of electricity : fruit waste farm, Grabouw;
- AD - generation of electricity : bovine manure, farm in Darling; and
- AD - generation of electricity : bovine manure, farm in Bonnievale.
- Waste Management License (WML) application for a Basic Assessment (BA )for Proposed construction of Animal Manure Storage Facility, Graafwater, Voorpaardeberg
- Tyre Pyrolysis plant Atlantis
- Cape Dairy biogas plant on Portion 3 of Farm No. 589 (Morgenster), Malmesbury
- Proposed Biogas Development in Saldanha Phase 1

### Projects waiting for approval of waste licences

- biomass fuel combustion - poultry litter , farm Romance;
- biomass fuel combustion - poultry litter, farm Doornekraal;
- biomass fuel combustion - poultry litter, farm Blomvlei
- bio digestion facility - organic waste, Athlone Industria

DRAFT

### Appendix 3: Integrated waste management by-laws in the Western Cape

**Table 1: List of by-laws in the Western Cape**

Name of Municipality	Name of Act
City of Cape Town	City of Cape Town Integrated waste management by-law, (2009 as amended in 2010).
<b>Overberg District</b>	
Langeberg	Integrated waste management by-law (2013)
Breede Valley	Breede valley municipality solid waste disposal by-law (2008)
Drakenstein	Drakenstein Municipality integrated waste management by-law (2013)
<b>Central Karoo District</b>	
Beaufort West	Municipality of Beaufort-west Notice 146/2005 By-law relating to refuse removal (2005)
<b>Eden District</b>	
Bitou	solid waste disposal by-law (2002)
Hessequa	Hessequa Municipality solid waste disposal by-law (2008)
Kannaland	No By-law available
Knysna	Knysna Municipality By-law relating to control over refuse removal and disposal sites (19109/2006)
Mossel Bay	Mossel Bay municipality By-law relating to refuse removal (2010)
<b>Overberg District</b>	
Cape Agulhas	Cape Agulhas municipality refuse removal by-law (2005)
Overstrand	Overstrand Municipality Integrated Waste Management By-law (2013)

Name of Municipality	Name of Act
Thee-waters-kloof	Theewaterskloof municipality by-law relating to refuse removal (2005)
<b>West Coast District</b>	
Bergrivier	Bergrivier Municipality: Solid Waste Disposal By-Law (2009)
Cederberg	By-law relating to the control of disposal sites (7/2004)
	By-law relating to refuse removal (20/2004)
<i>Matzikama</i>	Matzikama Municipality solid waste disposal by-law (2010)
Saldanha Bay	Saldanha Bay Municipality Solid waste Disposal by-law (2002)

## Appendix 4: Waste Economy players

Table 1 and 2 below present the main industry associations and academic institutions in the waste space based in the Western Cape

**Table 2: List of industry associations in the waste sector**

	Role of the organisation	Contacts
PlasticSA	It is plastic industry mouth piece and represents various industries in plastic sector in South Africa. Section 21 Organisation	Website: <a href="http://www.plasticsinfo.co.za/">http://www.plasticsinfo.co.za/</a> Anton Hanekom E-mail: <a href="mailto:anton.hanekom@plasticssa.co.za">anton.hanekom@plasticssa.co.za</a>
South African Plastic Recycling Organisation (SAPRO)		Website: <a href="http://www.sapro.biz/">http://www.sapro.biz/</a> Annabe Pretorius E-mail: <a href="mailto:annabe@absamail.co.za">annabe@absamail.co.za</a>
PETCO	PETCO was established in December 2004 as a Pty Ltd Company with the specific objective of promoting and improving the waste management and recycling of post consumer Polyethylene Terephthalate (PET) products on behalf of all stakeholders in the PET industry in South Africa	Website: <a href="http://www.petco.co.za/flash.html">http://www.petco.co.za/flash.html</a> Cheryl Scholtz e-mail: <a href="mailto:cheri.scholtz@petco.co.za">cheri.scholtz@petco.co.za</a>
Packaging Council of South Africa (PACSA)	PACSA is closely associated with The Institute of Packaging South Africa (IPSA) and it is a voluntary	Website: <a href="http://www.pacsa.co.za/">http://www.pacsa.co.za/</a>

	industry body. All its members are in three broad categories Converters, Associates and Affiliates. It also deals with major raw material suppliers, and affiliates are also customers and major recyclers.	
Paper Recycling Association of South Africa (PRASA)		Website: <a href="http://www.prasa.co.za/">http://www.prasa.co.za/</a> Ursula Henneberry e-mail: <a href="mailto:ursula.henneberry@pamsa.co.za">ursula.henneberry@pamsa.co.za</a>
South African Biogas Industry Association (SABIA)	The South African Biogas Association was created last year to support the growth of the industry. SABIA has approached the DoE with the intention to form a National Biogas Steering Committee. The 2 day conference being hosted in October, will discuss the industry challenges directly with the DoE, DEA and determine the roles of this national committee.	More information is available via <a href="http://biogasassociation.co.za/">http://biogasassociation.co.za/</a> Mark Tiepelt (Acting chairman) E-mail: <a href="mailto:mark@biogassa.co.za">mark@biogassa.co.za</a>
E waste Alliance	The e-Waste Alliance is a non-profit organization which helps to coordinate responsible management of the entire electronic waste (e-waste) stream in a one-stop shop format. The e-Waste Alliance is made up of independent business units who are able to handle all parts of the e-waste waste streams.  The e-Waste Association of South Africa (e-WASA) is a non-profit organisation which works closely	For more information: <a href="http://www.ewastealliance.co.za/">http://www.ewastealliance.co.za/</a> Suzanne Dittke E-mail: <a href="mailto:envirosense@xsinet.co.za">envirosense@xsinet.co.za</a>

	with manufactures, vendors and distributors of electronic and electrical goods, including e-waste handlers. Recently, e-Waste has gone into joined partnership with Mintek and has concluded their Memorandum of Understanding which will last for period of 5 years	
eWASA (e Waste Association of South Africa)	<p>The e-Waste Association of South Africa (eWASA) is a non for profit and was established in 2008 to manage the establishment of a sustainable environmentally sound e-waste management system for the country.</p> <p>eWASA works with manufactures, vendors and distributors of electronic and electrical goods and e-waste handlers (including re-furbishers, dismantlers and recyclers) to manage e-waste effectively.</p>	Website: <a href="http://www.ewasa.org/">http://www.ewasa.org/</a>

**Table 3: Academic Institutions in the Waste Economy Research**

Name	Role of the organisation	
Environmental & Process Systems Engineering (E&PSE) Group-University of Cape Town	This organisation consists of academia, researchers and postgraduate students from Chemical Engineering Department at UCT. Their work includes various discipline metal extraction	Contact: Prof Harro von Blottnitz E-mail: <a href="mailto:harro.vonblottnitz@uct.ac.za">harro.vonblottnitz@uct.ac.za</a>

	and so on, but they also focused on recovery of energy from biomass especial from waste and processing of waste material for return into industrial economy as raw materials.	
Biofuels Chair at Stellenbosch University	Responsible of developing a second generation technologies for the production of cellulosic biofuels via biochemical and thermo-chemical conversion, model integrated bio-refineries for biofuels and other chemical production. They run technologies through costs and life-cycle analyses (LCA) to evaluate the environmental and economic impacts on these technologies.	Prof Johan Gorgens E-mail: <a href="mailto:jgorgens@sun.ac.za">jgorgens@sun.ac.za</a>

