

Guidance on the Regulatory Framework to Facilitate the Implementation of Alternative Waste Treatment Technologies

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ABSTRACT

The implementation of alternative waste treatment technologies triggers a large number of complex legislative and regulatory requirements. The apparent lack of understanding of the regulatory framework has been suggested to be a barrier to the efficient implementation of alternative waste treatment technologies in South Africa. The Western Cape Government Department of Economic Development and Tourism (DED&T) initiated a project to assist municipalities with decision making for integrated waste management and to unlock the waste economy in the Western Cape. One of the expected outcomes of this project is to enable a more efficient process for the implementation of alternative waste treatment technologies. This paper presents that approach used to provide an overview of the policy and regulatory framework within the waste sector with particular reference to alternative waste treatment technologies. It presents the key elements of the review, as well how the review is being made accessible to municipal waste management and project managers.

1. INTRODUCTION

1.1 Background

The Constitution states that municipalities must provide communities with basic services such as refuse removal, sewage services, electricity and water services. Municipalities in South Africa are regulated by the Municipal Structures Act 117 of 1998, the Municipal Systems Act 32 of 2000 and the Municipal Finance Management Act 56 of 2003, which require certain processes to be followed in order to implement any new or alternate form of service delivery. Municipalities within the Western Cape (and across South Africa) are under increasing pressure due to national regulatory requirements such as the National Environmental Management: Waste Act No 59 of 2008 (NEM:WA) and the National Waste Management Strategy (NWMS) of 2011 to divert waste from landfill disposal and implement alternative waste treatment. The NWMS states that a 20% waste diversion from landfill needs to be achieved by 2016. Although the diversion rates in the City of Cape Town for example are higher than the average for South Africa i.e. 14% versus 10% (Department of Science and Technology, 2012; Hanekom, 2014), more diversion can be achieved and can serve as a foundation for a "Waste Economy". The Western Cape Government (WCG) considers the Green Economy, and within that the Waste Economy, as an area with great potential for economic development and job creation.

NEM:WA (2008) requires municipalities to develop integrated waste management plans (IWMPs). IWMPs are five year plans that are reviewed annually and contain plans for alternative waste treatment options that municipalities aim to implement. The implementation of such projects both in the municipal and private sector triggers a large number of complex legislative and regulatory requirements that need to be met prior to implementation. The intent is that these plans also outline how a municipality will deal with the waste generated in an integrated manner. The purpose of the IWMPs is to give effect to the waste hierarchy and ensure that all materials of value are removed and lower volumes of waste are sent to landfills.

Given the pressure to divert material from landfill, municipal waste management staff are regularly approached by technology providers offering waste treatment technologies or wanting access to their various waste streams (i.e. unsolicited bids). However, in order to implement such technologies municipalities must follow municipal service delivery and procurement processes to find suitable technologies and service providers aligned to their long term plans.

Some of the challenges that municipalities face in this regard range from incomplete knowledge or understanding of the legislation, inconsistencies between various regulations and local by-laws which then lead to inconsistencies in the implementation of legislation depending on individual interpretation.

2. PROBLEM STATEMENT AND PROPOSED INTERVENTION

The recent amendments in waste management legislation, particularly around landfill management and disposal (i.e. assessment of waste for landfill disposal), are becoming increasingly stringent as it is expected to increase the landfill gate fees almost threefold once implemented due to lining requirements for landfills generally. The above will drive the potential to implement alternative treatment options for waste management and, in effect by default, grow the waste economy further. Municipalities are required to integrate the waste hierarchy, which puts the disposal of waste to landfill at the very bottom as an end of pipe solution and promote the reduction, reuse and recycling of potential valuable waste streams. There is also an increasing understanding of waste treatment options implemented in developed economies particularly waste-to-energy technologies. This raises questions regarding the delay in implementation of alternative waste treatment technologies within South Africa. Various municipalities have planned for alternative waste treatment technologies (such as incineration or anaerobic digestion) to reduce the amount of waste that goes to landfill. Many municipal waste management staff (as well as those operating in the private sector) perceive (1) cost/lack of funding and (2) legislation and the regulatory framework for waste management as the primary barriers to implementation (Department of Science and Technology, 2012).

GreenCape is a sector development agency set-up by the Western Cape Government to facilitate the growth of the Green Economy in the province. Through GreenCape's engagement with stakeholders, in particular through its Waste Economy project which commenced in 2013, the view that the policy and regulatory framework for alternative waste treatment is a potential barrier to implementation has been confirmed in the municipal context as well as in the private sector. The counter view expressed by policy makers and regulators is that this is perceived rather than a real barrier. They argue that it is rather a lack of knowledge and understanding of the policy and regulatory context, and the time frames of regulatory and (municipal) decision processes, that leads to this perception. To overcome this impasse, a review of policy and legislation pertaining to alternative waste treatment was done. Based on this, a policy and regulatory tool is under development so as to make the regulation pertaining to alternative waste treatment more accessible and comprehensible. That said, it is worth noting that the Western Cape Department of Economic Development and Tourism commissioned a Regulatory Impact Assessment (RIA) focussed on waste regulation in 2013 (Council for Scientific and Industrial Research, 2014). The goal of this was to identify the cost of compliance as well as other barriers posed by waste regulations to businesses, particularly those operating in the waste sector, and to make recommendations for changes to reduce this burden and overcome the barriers. The RIA project thus complements the work presented here. However, any changes to policy and regulation at local, provincial and national levels may well take a long time to implement. It is the intent that the policy and regulatory tool described here provide guidance to those wanting to implement alternative waste treatment technologies within the current policy and regulatory context.

3. OUTLINE OF PAPER

This paper presents the key elements of the policy and legislation review and describes the approach used for the tool under development to assist both municipal waste management staff and the private sector when developing waste-related projects. It also presents examples of the content of the tool, which is to be web-based so as to be widely accessible to public sector officials and project developers.

4. REVIEW OF POLICY AND REGULATIONS

4.1 Approach and Example Outputs

The policy and regulatory review was done through a combination of desktop research/literature review and semi-formal interviews with officials from Western Cape provincial government, municipalities and potential project developers. Figure 1 presents a schematic diagram of the approach used to organise the information gathered through this process and develop the policy and regulatory review.

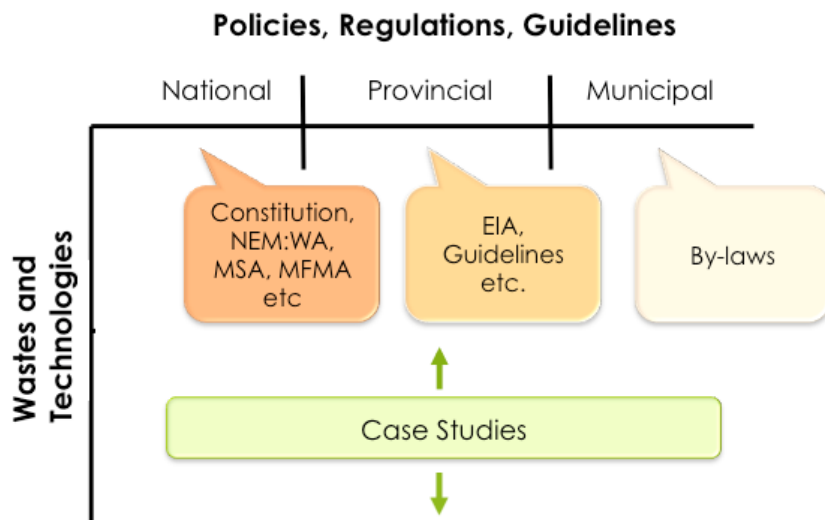


Figure 1: Overview of the approach to develop policy and regulatory tool

The first step was identifying all alternative waste treatment technologies, which were grouped into four categories i.e. chemical, thermal, biological treatment and mechanical treatment. This information was collated into an excel spreadsheet along with all the legislation applicable to those four categories. The scope of the review extended beyond environmental and waste management related legislation to include financial legislation and that pertaining to the use of the product generated (such as energy), as well the land being used or required. Table 1 shows the relevant legislation for the case of thermal treatment and specifically incineration. The inclusion of South African national standards (e.g. those pertaining to storage and handling of waste) is also necessary to make the review comprehensive and ensure the tool developed provides all the information required to project developers. It is important to note that older legislation such as the Environmental Conservation Act of 1998 and the Atmospheric Pollution Prevention Act of 1965 have been included because some elements are still in practice and applicable. An indication is also given of the timeframe and potential cost of any environmental impact assessment process. Of note is that the review showed that although much of the same legislation is applicable to most technologies, there are different legislative prerequisites for the different waste treatment options.

Table 1: Illustration of applicable legislation for the implementation of a thermal treatment (incineration) plant

TECHNOLOGY	ENVIRONMENTAL LEGISLATION	ENERGY LEGISLATION	FINANCIAL & ADMINISTRATIVE REGULATION	DEVELOPMENT REGULATION	SOUTH AFRICAN NATIONAL STANDARDS	LICENCE REQUIRED	ENVIRONMENTAL AUTHORISATION, EIA or BA REQUIRED	APPROXIMATE COST AND TIME FRAME FOR EIA AND BA
Thermal Treatment (Combustion/Incineration)	The Environmental Conservation Act No 73 of 1989	National Energy Act No 24 of 2008	Municipal Systems Act No 32 of 2000	National Building Regulations and Building Standards Act No 103 of 1977	SANS 0263 - Warehousing of Dangerous Goods	Atmospheric Emissions Licence	BA listing Notice and triggers (Found in NEM:WA)	BA: >R80 000,00 7-9 Months
	National Environmental Management Act No 107 of 1998	The Gas Act No 48 of 2001	Occupational Health and Safety Act No 85 of 1993	Land Use Planning Ordinance (No. 15 of 1985)	SANS 10087- Handling, Storage, Distribution and Maintenance of Liquefied Petroleum Gas	Waste Licence	EIA listing Notice and triggers (Found in NEM:WA)	EIA: >R150 000,00 9-14 Months
	National Environmental Management Waste Act No 59 of 2008	Gas Regulator Levies Act No 75 of 2002	Municipal Structures Act No 117 of 1998	Land Use Management Bill 2007	SANS 10400- National Building Regulation			
	National Waste Management Strategy 2011							
	National Environmental Management: Air Quality Act No 39 of 2004 Atmospheric Pollution Prevention Act No 45 of 1965			Municipal Finance Management Act No 56 of 2003		SANS 310- Storage Tank Facilities for Hazardous Material SANS 10228- Identification and Classification of Dangerous Goods for Transport SANS 10229- Packaging of Dangerous Goods for Transportation		

Table 2: List of technologies incorporated in the tool

	Scope of Technologies
1	Incineration/ Combustion (Including Thermal Oxidation; Fluidised Bed Co-combustion; Biomass Boiler; Cement Kiln)
2	Pyrolysis
3	Gasification
4	Plasma Arc
5	Aerobic digestion
6	Composting(in-vessel & open composting)
7	Anaerobic Digestion
8	Material recover facility (clean and dirty)
9	Landfill Gas Extraction

The policy tool covers nine different technologies as shown in table 2. Mechanical biological treatment (MBT) was not included as an independent technology. This was due to the licence requirements being a combination of a material recovery facility and any of the biological treatments listed in table 2. This will be highlighted and linked in the development stage of the tool.

5. POLICY AND LEGISLATION TOOL

5.1 Intent and Approach

The approach being used to make the policy and regulatory framework more comprehensible and accessible is through the development of a web-based tool. The tool will be considered successful if municipal waste management staff and private sector individuals are able to more readily understand what it required of them and, as a result, would ultimately be able to implement their waste management projects more efficiently.

The success of the tool will depend on the usability of the tool and its ability to add value to the decision making process within a municipality or for private sector individuals. As a consequence, during the development of the tool, it was tested with municipal waste management staff. Municipalities are selected based on their willingness to participate in the development of the tool, but care was also taken to do the testing with a range of municipal waste management staff with different technical backgrounds and levels of experience.

5.2 Other Tools and Specific Value of the Policy and Legislation Tool

A review of existing tools was conducted along with the literature review to determine what value add the tool could provide compared to what is currently available in South Africa. Results showed that other waste information programmes and compliance management tools are available. Table 3 is an example of some of the tools that are available.

Table 3: Example of the existing waste management tools in South Africa

Tool	Owner	Functionality
South African Waste Information Centre (SAWIC)	Department of Environmental Affairs	SAWIC is an online website with access to information on waste management in South Africa. This lists relevant legislation and either has documents or indicates where these can be found. However, the information is not structured to indicate clearly which policies and regulations might be applicable to those wanting to implement alternative waste treatment technologies.
Digilex	Green Gain Consulting	It is a Safety Health and Environmental Quality (SHEQ) Management System including legal registers. This provides information on legislation and compliance regulation regarding all aspects of safety, health and environmental quality and is used for industry compliance management. It does not provide step by step guidance for municipal finance process and technology specific legislation.
SpotOn	Cullinan & Associates	It is an online, interactive compliance management system, which assists businesses avoid non-compliance incidents and minimize the legal risk to the business. It covers health, safety and environmental laws. The major difference with the tool being developed within GreenCape is that its focus is on all aspects of compliance management rather than particular process associated with the implementation of alternative waste treatment technology.
Southern African Biogas Industry Association (SABIA) tool	Southern African Biogas Industry Association (SABIA)	The tool focuses on biogas licence application process. This only helps with the licence application regulation applicable to biogas plants and not on all those pertaining to additional waste treatment technology such as composting. However, it provides a step by step guide to enable the identification of requirements for licences required for biogas plants by allowing the user to answer a set of questions based on a number of factors such as project scale, waste quantities, site requirements, etc.

The above table and review shows that none of the above mentioned tools are comprehensive and cover a large range of potential technologies, as well as legislations related to integrated waste management and alternative treatment technology. They are primarily focussed on compliance management for businesses rather than municipalities. Thus the value add of this tool is that it provides a comprehensive overview of legislative requirements for waste treatment, to both municipalities and potential project developers in search of access to municipal waste streams, and it also covers the public procurement process for municipalities. It is thus of particular value to municipalities, as it is able to guide them through the regulatory and municipal decision making processes required when wanting to change/upgrade any municipal waste management system.

5.3 Key components of the tool

The key components of the tool are:

5.3.1 The unsolicited bids guideline

The unsolicited bid guideline is a combination of Word and Excel based documents aimed at enabling waste managers to make informed decisions when approached by technology providers via an unsolicited bid. This document was developed to empower municipal waste management staff, and help them assess the technical and financial viability of the project proposals presented to them. The Excel based document is a combination of questions the project developer is required to complete regarding quantities of waste required, length of contracting period, costs of the technology, examples of successfully operating plants elsewhere in the world, etc. This tool was developed as a result of waste managers being inundated with projects proposal which were inappropriate for the municipal context i.e. based on the availability of waste streams and costs. The unsolicited bid guide also directs the user to the National Treasury processes a municipality will have to abide by should it decide to accept an unsolicited bid.

5.3.2 Legislation regarding alternative waste treatment technology

The web-based tool, which is based on the review presented earlier, provides a comprehensive list of applicable legislation per technology including certificates, permits and licences. It is the intent that awareness of the web-based tool be raised through training of municipal waste management officer's. The flow of information in the tool is presented in Figure 2 and it is set up in such a way that the user can extract tailored information from the site. It provides both the key extracts from the policies and regulations as well as an explanation of its intent and what it implies.

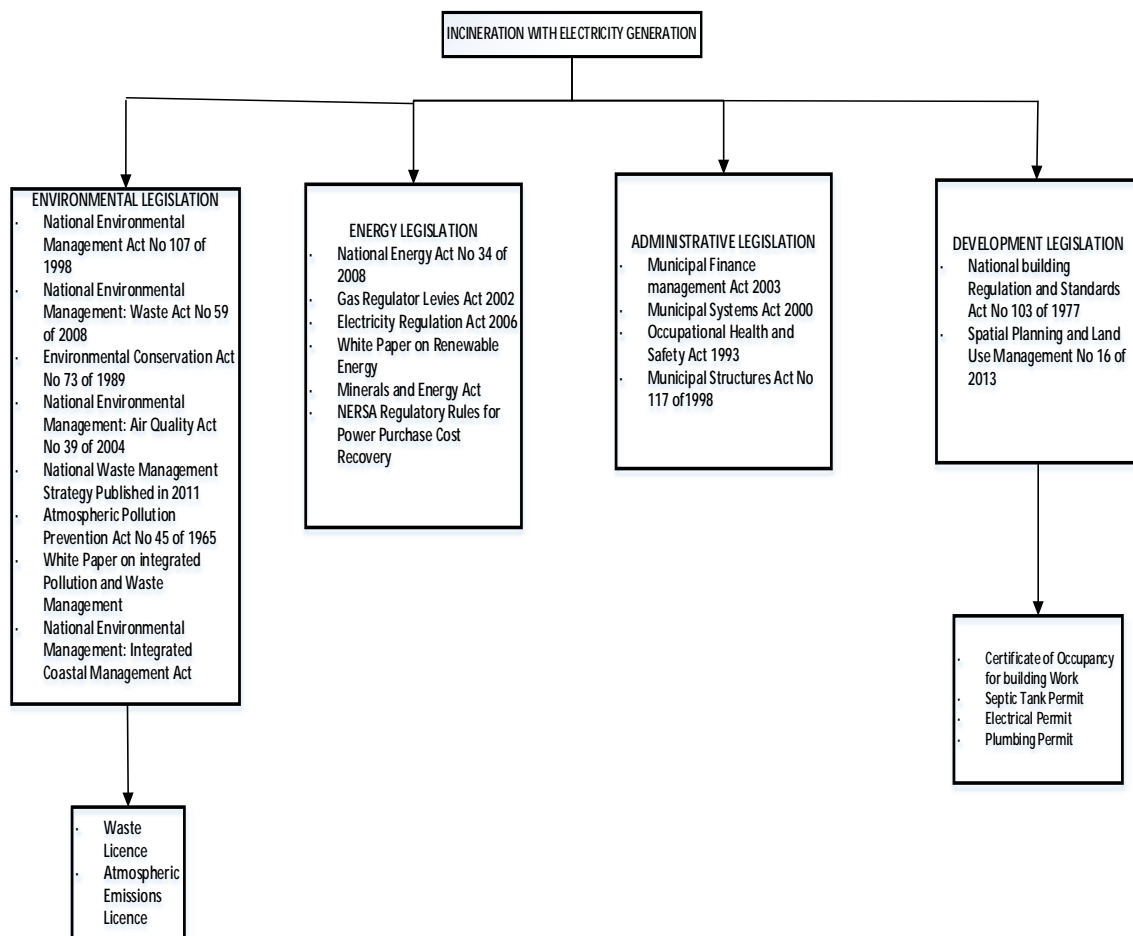


Figure 2: Flow of information in the web-based policy and regulatory tool

5.3.3 Municipal process diagrams

The municipal process diagrams have been developed to inform both municipal waste management staff and the private sector on processes required to access municipal solid waste. These diagrams are integrated in the web based tool, which covers municipal funding processes. It outlines the process to develop and indicates the importance of IWMPs. It shows the process to and the importance of their integration into the municipal Integrated Development Plans (IDPs) which determines the funding requirements of a municipality and ultimately the actual funding allocated to projects such as waste management infrastructure. Figure 3 illustrates the process required to secure funding for waste management within a municipality. The tool provides more detailed information about this process.

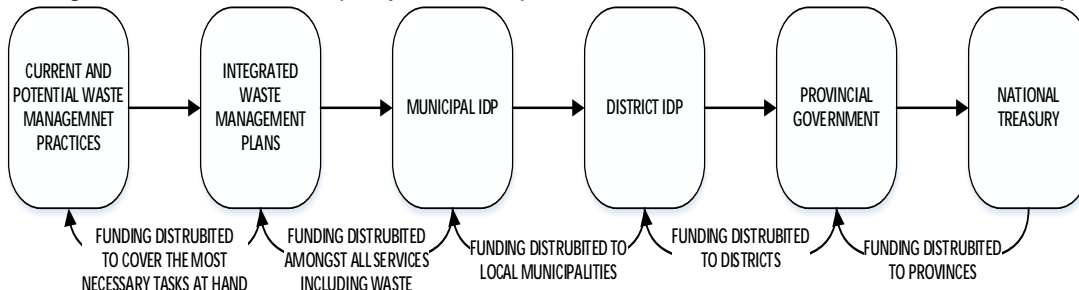


Figure 3: Process by which funding can be allocated for waste management in municipalities

6. A FEW OBSERVATIONS ABOUT RESPONSES TO POLICY AND REGULATION

Some observations can be made regarding responses to policy and regulation that have emerged from the stakeholder engagements done for the regulatory and legislation review. These are:

- That some of the challenges associated with the legislation and regulatory framework (i.e. government gazetted acts) are sometimes perceived barriers and often linked to the interpretation of the legislation.
- There is a need to equip the private sector to understand the policies and implications on the industry more specifically. Developers are not aware of the legislative requirements until they are ready to develop or implement their alternative waste treatment project. This service is currently offered at a substantial cost by environmental and legal consultants, not always accessible for small and medium enterprises (SMEs) with limited resources and capacity.
- Integrated waste management plans developed by Western Cape municipalities to date typically do not contain implementation strategies. Many municipalities have limited funding and capacity, and require technical support at various stages of the decision making with regards to developing integrated waste management systems and implementing alternatives treatment technologies.
- Land use and zoning regulations at a national and municipal bylaw level were also seen as large contributors to delays in development. There is not always a clear understanding of the regulatory framework so these are often unanticipated and hence are seen as a delay.

7. CONCLUDING REMARKS

It will take some time to be able to determine whether the tool has been successful and realise its intent to enable municipalities and those in the private sector to more efficiently plan for and implement integrated municipal waste management and alternative waste treatment projects in the Western Cape. The testing of the tool will begin once a beta version has been developed, it is expected that a beta version will be ready early 2015. Although the tool will be developed with a focus on the Western Cape, it is expected that its application will be valuable elsewhere in South Africa as well. One of the key challenges going forward is ownership of the tool and responsibility for updating the tool with any changes in the legislation. However, it is expected that if the tool meets the needs of its audience, funding for its maintenance could be obtained.

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