

Toolkit: South Africa's Good Waste Management Practises – Lessons Learned

ABSTRACT

The current poor state of waste service delivery by South African municipalities is a concern due to the potential impacts on human health and the environment. All municipalities are faced with similar challenges including lack of funding, low priority afforded to waste management and capacity problems to deliver services, although to different degrees. Despite this rather discouraging situation, certain municipalities have managed to overcome some of these challenges and good waste management practices are to be found. This paper reports on the development of a Toolkit for municipal waste management service delivery, based on some of the good waste management practices currently implemented in different municipalities across all the categories of municipalities in South Africa.

1. INTRODUCTION

In terms of Schedule 5B of the South African Constitution (Act 108 of 1996), local municipalities are mandated to provide waste removal, disposal as well as cleansing services. The current cleanliness of our country and the general status of waste management could therefore be indicative of how well municipalities are performing these functions. Stats SA (2007), reports that only 61% of households in the country, which translates to about 50% of the population, receives a regular waste collection service. In addition, about 66% of all existing landfill sites do not have permits (DEAT, 2006). The majority of these sites are owned by municipalities. This is some of the evidence supporting suggestions that government is the biggest culprit of non-compliance to environmental legislation.

The following broad themes have been identified by different research projects as the main problems encountered at municipalities in delivering waste management service; financial management; equipment management; labour (staff) management and institutional behaviour (management and planning) (DEAT, 2007; Godfrey and Oelofse, 2008). It has, however, been established that these are merely symptoms of a number of underlying and interrelated root causes (Oelofse and Godfrey, 2008). The mere implementation of the Waste Act, 2008, without addressing the root causes of the problems experienced by municipalities, is unlikely to improve the situation. While some of the identified challenges are outside the control of the municipalities, some municipalities found innovative ways to overcome these challenges and provide reasonably good waste management services. Therefore, the development of a toolkit that presents good practices implemented in municipalities was proposed. It is believed that such a toolkit can be an effective reference tool that could be instrumental in the improvement of waste service delivery in municipalities across the country. The toolkit will be circulated widely for use by key stakeholders dealing with municipal integrated waste management in South Africa.

This paper highlights some of the good waste management practices that were identified within municipalities. The intention is to facilitate information sharing and learning between municipalities. An assessment of a random sample of some of the best-performing municipalities in the country including why they do so well, would give an indication of the direction that waste management services should take towards improved service delivery. The success of some of these municipalities may be duplicated in other municipalities (COGTA, 2009).

2. METHODOLOGY

2.1: Selection of case studies

The first step in this study was to identify good waste management practices in the different municipalities. This was achieved through:

- a. The results of the Cleanest Town Competition which assisted in the identification of municipalities where waste management seems to be working. The focus of the competition is waste management and the general cleanliness of the area. It has been run on an annual basis by the Department of Environmental Affairs (DEA) throughout the country since 2002. Provincial competitions are held and the winners then compete at national level.
- b. The results of a national survey including 126 municipalities, undertaken by the CSIR in 2009 on waste management practices.
- c. Liaison with the South African Local Government Association (SALGA).
- d. Referrals from other local municipalities.

It was soon realised that there is no single municipality with an ideal waste management system, but elements of good practices in different aspects of the waste management cycle could be found in different municipalities. As such, the different elements of the waste management cycle were identified and good practices relating to each grouped together. Therefore, the good practices are divided into the following aspects; waste collection, transport, minimisation, disposal and awareness arising.

It was important to ensure that all the different municipal categories were included. It was equally important to diversify the types of good practices documented. A total of 19 local municipalities and 5 Metros, covering 7 provinces were selected for potential contributions to the Toolkit.

2.2: Data collection

A survey questionnaire was developed to assist in capturing the good practices. The questionnaire comprised of two sections. The first section dealt with background information to the municipality such as demographics, financial and institutional issues to enable a good appreciation of the good practice as well as establish the potential requirements for any one practice to succeed. The second section focused on the good waste practices.

Each researcher was allocated four or five municipalities to visit. The interviewers were encouraged to capture the answers onto the questionnaire during the interview on site to allow for further explanation in cases where the person being interviewed may have misunderstood the question and also to allow for probing. In addition to completing the questionnaires, the municipalities were requested to take the researcher on a site visit where the good practice could be seen in action. The site visits served a dual purpose: on the one hand the researcher could get a feel for the practical implementation of the practice while at the same time it was possible to evaluate the success of the practice.

2.3: Presentation of findings

The findings of the project are being compiled into an easy to read booklet with lots of pictures to demonstrate the good practices. Contact details from all the documented case studies will be included to enable further engagement between the municipalities.

3. CASE STUDIES

Although the challenges experienced by municipalities can be broadly divided into 4 groups, this does not reflect a true picture of the challenges. In many instances there are other underlying problems to the one stated. Oelofse and Godfrey (2008) give an example of financial constraint which revealed other underlying issues such as the capping of municipal budgets by National Treasury and ineffective cost recovery for disposal at landfills, just to mention a few. However, there are common challenges that municipalities experience. These were documented as part of the 'Local government capacity assessment' undertaken by DEAT in 2007 and are explained below.

3.1: Waste Collection

Kerbside collection is feasible and practical in established urban townships with infrastructure but is hampered in rural and informal settlements due to poor planning and limited road infrastructure. Furthermore, unregistered properties restrict municipalities' ability to collect rates and taxes, hence impede services being rendered. In rural areas, collection is constrained by both poor road access and collection distances, which results in excessively high transportation costs (DEAT, 2007). In these instances, municipalities often do not provide a regular waste collection service, which frequently results in the illegal dumping of household waste by community members.

Alternative ways of collecting waste from areas where access is limited need to be sought. The food for waste programme, which has been rolled out in a few municipalities across the country such as Hibiscus Coast Municipality, is one way of facilitating collection in such cases. This programme uses community members to collect waste within their neighbourhood and take it to central designated collection points. The beneficiaries are given food parcels as a form of payment. Regular inspections are undertaken to ensure that the neighbourhood is clean. The community at large also acts as watchdogs to ensure that the beneficiaries do collect waste as required. This programme has an added advantage of contributing towards poverty alleviation. Furthermore, this has created a market for the fresh produce of local emerging farmer farmers. In Breede River Winelands Municipality, households from the rural areas bring their waste to transfer stations and pay a minimal fee towards the further management of the waste.

Another dimension to waste collection relates to activity or seasonal demands. This applies to tourist destinations and areas which normally host huge events such as sports tournaments etc. In these cases, special arrangements have to be made to cope with the increased waste loads. Bitou Municipality, which is a common holiday destination, doubles its collection frequency during peak holiday seasons. Waste collection is thus twice a week instead of the normal weekly collection. This however, has additional financial implications since the workers have to work double shifts. Furthermore, additional workers are normally employed to assist with the collection. The success of collection frequencies is however, largely determined by the availability and condition of collection vehicles. This will be discussed further below, under the section dealing with transport.

Centrally located skips provided by the municipality for the community members to dispose of their waste in townships and informal areas is a fairly common practice. However, this type of service has not been very successful as the communal collection points are often plagued by litter waste not finding its way into the skips. The City of Tshwane has piloted a walk-in bin concept in Mabopane as an alternative to using skips. These bins allow the community members to push their wheelbarrows into the bin and then dump the waste. A standard 12 m³ container was fitted with doors and a ramp to enable easy access for wheel barrows and children. These containers are locked during the night to avoid undesirable behaviour in the containers or the waste being strewn in the streets. These are reported to have improved the cleanliness of the area significantly.

3.2: Waste Transportation

The main obstacle in transportation is the huge capital outlay required for appropriate collection vehicles. Transportation costs are further aggravated by volatile fuel prices (DEAT, 2007). Municipalities also seldom have back-up or standby vehicles to enable them to continue with the service in cases when there are break downs, which happens often as many municipal vehicles are old and often not well maintained. This in turn negatively affects the frequency and consistency of waste collection. Transport distance to landfill sites is also a problem since it entails huge costs (DEAT, 2007).

The City of Tshwane has leased all its trucks, thus minimizing the capital outlay required. The maintenance of the vehicles is included in the lease agreement which resulted in a significant decrease in down time of collection vehicles. The municipal workshop is also operating on a 24 hour basis to attend to any breakdowns, and to ensure that the trucks are checked on a regular basis.

Vehicle damage is minimized through an operating routing system. Vehicles doing collection do not go to the landfill sites but rather to the garden refuse sites, which act as transfer stations. The waste is taken by chain lifters from the garden refuse sites to the landfill sites. These also do not go to the working face of the site. There are specific vehicles that do so. This minimizes damage or breakage of vehicles as the conditions at landfill sites are known to cause damage to vehicles.

Double shift work (Day shift from 7:00 – 17:00; Night shift: from 17:00 – till all collections are done) has also maximised the collection process as well as contributed to huge financial savings. Working double shifts optimizes the use of the leased trucks (double usage for the rental period), hence a cost saving. Further cost savings are made on salary payments. Before this system was implemented, overtime payments were made on a regular basis since collection would extend well into the night at most times requiring the workers to work over time at double pay. Introduction of the double shift resulted in the employment of more workers but at a fixed monthly salary.

3.3: Waste Minimisation

The adoption into policy of the internationally accepted waste management hierarchy (Sakai *et al*, 1996) changed the focus from 'end of pipe' waste management towards waste minimisation including re-use, recycling as well as cleaner production. The assessment undertaken by DEAT in 2007 to determine the status of delivery for waste management and capacity in local municipalities revealed that most of the municipalities (87%) reported a lack of capacity and infrastructure in pursuing waste minimisation as opposed to the core functions. Over 80% of the local municipalities reported that they are initiating recycling activities in some manner or the other but that they are struggling to get the initiatives off the ground due to a lack of capacity (DEAT, 2007).

Recycling tends to be successful in larger urban centres where there are competitive markets for recyclable materials (DEAT, 2007). The proximity of the recycling centres also plays an important role in the sustainability of recycling initiatives such as buy-back centres. The further the industries, the more the transport costs and the smaller the profit margins for the pickers. Apart from transport constraints, there are no real incentives for communities to participate in recycling initiatives (reduced rates; financial returns etc.).

Several municipalities such as uMhlathuze, George, Hermanus and Overstrand have initiated the so called double bag system. Community members either buy or are provided with two plastic bags of different colours, one for general waste and the other for recyclable waste. The bags containing the recyclables are either collected on the same day as the general waste collection or on different days by either the municipality or private companies. In cases where both bags are collected by the municipality, there is a need for trucks with two separate compartments to keep the recyclables separate from the general waste.

Other municipalities added an additional bag for garden waste. In this regard, limits were placed on the

number of bags for general waste and garden refuse per week while there was no limit on the number of bags containing recyclables. This approach acts as an incentive to people to sort their waste. However, to ensure a successful two bag system, it is important to ensure that the community involved is properly informed and educated about the system. Furthermore, it is important to investigate collection options that minimise costs to the municipalities such as bringing in private contractors. Consistent bag distribution and collection of the recyclables will also ensure that the system does not collapse.

End of pipe waste recovery is currently common practice in South Africa. This is practiced in many different ways including controlled coordinated programmes as well as individual uncoordinated salvaging on landfill sites. The latter is an undesirable and dangerous situation which in some cases has resulted in loss of life. Swartland Municipality is an example where waste recovery has been introduced and with benefits for the contractor who initiated it, the workers on the project as well as the municipality. The contractor operating the Highlands landfill site established a materials recovery facility (MRF) at his own cost. Waste is taken to the MRF where recyclables are recovered from the waste stream. This has reduced the amount of waste going to landfill drastically, resulting in a significant saving on the available air space. The municipality thus pay 25% of the saving made on air space to the contractor and about 20 jobs have been created. Businesses also bring their own recyclables to the MRF at the landfill site, thus saving on disposal costs. An added advantage is that cleaner recyclables with a higher resale value than those recovered from the general waste stream contribute to the success of this initiative.

The unappreciated value of builders' rubble and garden waste is clearly illustrated at one of City of Tshwane's landfill sites where entrepreneurs are to be found. Recovered bricks and other items such as flower pots, tiles and even plants are sold on the landfill site by these entrepreneurs. One entrepreneur uses recovered wood to make dog kennels on site. These are sold at the landfill site as well as in town (in Pretoria) at the market. This landfill sites have been turned into a market for a wide range of recovered products. Although the situation at the landfill cannot be encouraged, the innovation of these entrepreneurs should be appreciated. Garden refuse in many municipalities including Breede River Winelands, City of Cape Town and Drakenstein, is used for composting.

Other approaches which have been developed to encourage and facilitate waste minimisation included the establishment of the web based waste exchange programme by the Nelson Mandela Bay Metropolitan Municipality. Available unwanted items are listed on the internet and matched with potential users while end users may also post the items they require. It is important to note that the limitation of this system is that it limits access to those who have internet access.

Abaqulusi Municipality on the other hand operates a small landfill site and does not have the resources required. Abaqulusi has however established a remarkable intervention to deal with salvaging on its landfill sites. Pickers are required to get a permit from the municipality to allow them onto the landfill site and salvage. This permit system controls the number of people on the site, time as well as the times which pickers can be allowed on site and what they are allowed to recover. Further limitations on the permit include restriction on children and animals, burning and eating on site. Specific requirements of the permit include the use of protective clothing. This practice has formalised the salvaging and the pickers with permits also act as watchdogs for other illegal salvagers. In addition there are security guards deployed at the site who enforce the conditions of the permit.

3.4: Waste Disposal

The safe disposal of waste requires all elements of capacity including, adequate infrastructure, personnel and financial resources. Nationally there are over 2 000 waste handling facilities, of which only 530 are permitted (DEAT, 2007). The key challenge relating to waste disposal is cost (DEAT, 2007). Huge cost investments are required for the development of landfill sites, their operation as well as their closure and rehabilitation. The required legal processes preceding the establishment of a new landfill can take several years to complete. Timeous forward planning is therefore vital. On-going monitoring is also important to ensure proper

implementation of permit conditions.

Few well managed landfills are operated by municipalities themselves. Ekurhuleni Metropolitan Municipality is a prime example of well operated landfills as a result of the operations being outsourced. The municipality however, has strict control and monitoring procedures in place to ensure that the operators deliver as per their contract stipulations. This has proven to reduce down time of equipment and optimises the utilisation of resources. Sufficient budget allocation to waste management has been attributed to political support in this municipality. In addition, good financial management is an important requirement in ensuring a sustainable system. Budget tracking and setting waste tariffs on the basis of the cost for providing such a service are also key aspects to the financial sustainability of this approach.

Proactive planning is singled out as the most important aspect contributing to the success of outsourced landfill operations in Ekurhuleni. The metro has established a Rehabilitation Fund that will be used for rehabilitation of the landfill sites upon closure. For every tonne of waste disposed, R7.00 is deposited into the fund. Furthermore, although the Metro has approximately 20 years of airspace available, they are already in the planning phase for the development of a new site. Good information management is also key to operating sustainable sites, which comply with all its legal requirements. All information relating to the operation of the sites, the personnel, contracts, etc is well documented and filed for record purposes. This also has an added advantage of assisting in forward planning.

Ekurhuleni Metropolitan Municipality operates large sites which have all the necessary access control and resources as required by the minimum requirements for landfill.

3.5: Awareness and Education

A summary of key strategic issues intended to inform the new National Waste Management Strategy has identified public awareness as key in ensuring the effectiveness of many waste management measures, particularly those aimed at waste reduction and illegal dumping (DEA, 2009). It is further argued in this document that there is also a lack of awareness and understanding of the importance of waste management amongst elected political representatives in government especially local government (DEA, 2009). This has negative consequences for planning, personnel and budget allocations. Awareness creation amongst all key stakeholder groups including local government officials and councillors is therefore imperative for effective, sustainable waste management services. There is a wide range of methods used to raise awareness. A combination of all or as many methods as possible will assist in reaching the desired impact. It is however, important to choose the methods and materials that are appropriate for the target audience and for the specific situation of the municipality. A few of these methods will be discussed below.

There is a wide range of programmes undertaken by municipalities as part of awareness creation. These include clean-up campaigns, talks at schools, celebration of environment days/events, billboards, posters, radio programmes, news letters etc. Saldanha Bay has 2Wise2Waste bill boards. Breede River Winelands and Drakenstein municipalities issue out flyers that inform residents on good waste management practices and procedures. In addition to the above mentioned programmes, Steve Tshwete Municipality further undertakes training and workshops for traditional healers, food handlers etc. They also undertake door to door visits to talk to people about issues such as illegal dumping and waste collection. This approach is also used in Nelson Mandela Bay Municipality. Furthermore, they have also employed the concept of the Cleanest Town Competition to schools and run 'A Cleanest Schools Competition'. This was initiated in 2009 to encourage schools to keep their premises clean. The programme targeted schools in areas which have a bigger waste problem than others. The Adopt-a-spot awareness creation project in Hibiscus Coast Municipality is also aimed at schools. This programme aims to keep a 100m zone around the school clean. The project runs during the National clean-up week with municipal waste management staff giving a recycling demonstration. Bins and bags are provided and there is a prize for the school with the cleanest spot.

Exhibitions are also a good way of raising awareness. Overstrand Municipality has an exhibition at the local annual flower show. The waste cycle is explained on posters and the public and school children are made aware of the impact of waste and the advantages of recycling. The City of Cape Town also has a similar stall at Home Expo. Some municipalities i.e. City of Cape Town, have dedicated sections which deal with environmental education and awareness raising for all environmental issues. They partner with several members in the recycling industry to maximise the effort and impact. Schools, entrepreneurs and businesses are targeted. They also have several pilot implementations of separation at source.

3.6: Law Enforcement

Enforcement of legislation, policies and strategies is key to ensuring the successful implementation of what those pieces of legislation intended. However, this is one area that requires urgent intervention in many municipalities. Although the Environmental Management Inspectors are generally regarded as the only enforcement authorities, normal government officials have general powers which they can use to enforce environmental legislation. Below are examples of how some municipalities monitor and combat environmental crimes especially illegal dumping.

All building sites in Saldanha Bay Municipality register for the provision of a skip before the building plans are approved. These skips are tracked at the landfill site when the waste is disposed. If the skip does not make its way to the landfill further investigations are always triggered. This practice significantly reduced the illegal dumping of builders' rubble in Saldanha Bay.

Steve Tshwete Municipality has an anonymous reporting line for the public. In addition, Environmental Health Officers also undertake illegal dumping monitoring over weekends. This normally targets specific problem areas. These officers undertake thorough investigations to track those responsible for the illegal dumping. E.g. Trace waste dumped illegally back to the owner by going through the waste and gathering any clues such as names and addresses on some of the material. When the culprits are found they are issued with spot fines by the Squatter Control Officers, who are trained Peace Officers. The fines range from R500.00 to R1 500.00 and are included in the rates accounts.

4. DISCUSSION AND CONCLUSIONS

Albeit the general sentiment that service delivery is deteriorating in municipalities, there are some municipalities which are still performing well, at least in certain areas. It has been realised that there is no single municipality with an ideal waste management system, but elements of good practices in different aspects of the waste management cycle could be found in different municipalities. Making known such practises and sharing such information between municipalities could result in an improved waste management service delivery in the country. Municipalities generally experience the same obstacles and problems in relation to service delivery especially in waste management. The low priority afforded to waste management in municipalities is probably the biggest obstacle when competing for funding and resources against higher priority services such as housing, electricity, water and sanitation. The lack of capacity both in terms of the knowledge base, skills as well as numbers of experienced personnel is also concerning. Lastly public awareness and appreciation of the need and complexities of waste management is a major stumbling block in achieving effective and sustainable solutions for waste management.

The case studies presented in this paper range from B4 local municipalities to Metros. This is a good indication that it may be possible to provide effective and efficient services despite the limitations faced by the municipality. Some of these interventions/programmes do not involve huge financial costs, hence can be implemented across the country. The intention of this study is not only to duplicate these practises but also to improve on them or for municipalities to be inspired to think innovatively around other more appropriate programmes applicable to their local situations. This study also managed to encourage some municipal

officers to continue their good work. The project team is optimistic about the potential impact that the sharing of the good practices being implemented in municipalities could have on the overall quality of waste management service delivery in the country. It is the intention to continue searching for additional good practices to be included in future versions for continued improvement of waste management service delivery.

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