

An Integrated Waste Management Plan: The Challenge of Implementation and Management – A South African Perspective

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ABSTRACT:

The advent of a strong Waste management Regulatory Framework compels Municipalities in the country to implement and manage an Integrated Waste Management Plan (IWMP) and integrate it into the IDP aligning it to all services. A growing population, additional pressure by communities on infrastructure requirements, increased demand for basic services require that an effort is made to meet the demands for the present and future.

In developing an IWMP an immense amount of research and consultation with Municipal Officials must be undertaken in order to understand where do Municipalities stand in delivering on waste management. In recent years, communities have pressurized Municipalities to meet their mandate of service delivery

The implementation of the waste management hierarchy and achievement of the objectives of the IWMP is integral to achieving a sustainable future and a better life for all South Africans. This requires that municipalities move away from traditional “end of pipe” solutions that focus on waste after it has been generated i.e., collection, transport, processing, recycling or disposal of waste material to a service which focuses on the prevention of waste as well as the minimisation of waste as a by-product of production. The delivered service must maximise efficiency and minimise environmental impacts and financial costs with the ultimate aim of improving quality of life. These measures must be practical, achievable, implementable and sustainable which will require coordinated action by many players, including households, businesses, community organisations, NGOs, parastatals and the three spheres of government.

Inadequate waste services poorly planned and maintained waste management infrastructures, and limited regulation of waste management, threaten the health and wellbeing of everyone in South Africa. Addressing this and its negative environmental and social consequences advances people’s constitutional right to a healthy environment. The IWMP aims to address imbalances in waste management.

The implementation and management is an ongoing challenge in this radically changing environment and this paper seeks to outline some of the challenges and how they have been met or are being met in by Municipal Waste Management Officers.

1 INTRODUCTION

As per the UNEP ISWP(2009), only 20-50% of municipalities spend their budgets on solid waste management. This poses an ever growing challenge and as a result managing and implementing an integrated waste plan requires quality data, appropriate policy and governance, adequate systems and financial framework. The integrated waste management plan sets out the strategy required to achieve a desired state of waste management.

There are in many cases considerable efforts being made to effectively control waste handling, generation, disposal and seeking alternative ways to minimize the waste streams, however there are areas that need attention and support to help with implementation and management of waste planning.

1.1 Challenges in South Africa

Most municipal integrated waste management plans (IWMP) highlighted concerns around the accuracy of waste data (DEADP, 2011) e.g. “not accurate”, “theoretical” or “assumed to be typical”.

1.1.1 Governance

The status of waste management within various Municipalities may vary, this could be attributed to the roles and responsibilities amongst individuals from different divisions within each municipality.

Designated Waste Management Officers are not officially appointed and organisational structures do not make provision for Waste Management Officers. The waste function in smaller municipalities is often combined with other non-related portfolios.

The organisational structure within Municipalities is inadequate or is not approved; vacant posts are not advertised and filled due to a lack of funding.

Municipalities have to rely on Expanded Public Works Programme resources (EPWP) provided by the Department Public Works to render waste management services.

By-laws are inadequate and if approved are not enforced due to a lack of resources.

There are only a few municipalities that comply in terms of developing Waste Management Policies and plans.

1.1.2 Collection/Handling

Waste in various affluent municipalities are disposed of in plastic receptacles whereas waste in rural municipalities are disposed of in plastic bags. Not all Municipalities provide bags and make it the responsibility of home owners to provide their own waste disposal bags.

Medical and hazardous waste may be mixed with general waste due to inadequate facilities or bylaws addressing these issues.

Illegal dumping of waste is increasing in various Municipalities due to a lack of resources and enforcement to render appropriate waste management services.

1.1.3 Transport

Some municipalities utilises equipment that is not a right fit for waste management activities e.g. tractors and trailers are used for waste collection.

Where Municipalities have adequate equipment, this is not fully utilised which may be attributed to their operations e.g. no route planning.

Households in rural areas are not accessible due to lack of infrastructure (roads) and modern technologies used to collect and transport waste.

1.1.4 Sustainability

Municipalities are not compliant in reducing the amount of waste directed to landfill as a result of By-laws not making provision for initiatives to be executed and enforced e.g. waste separation at source, recycling.

A high percentage of recycling takes place at disposal facilities by reclaimers where waste is contaminated and the environment is not safe and healthy for human activities.

Limited progress in terms of identified Waste to Energy projects, only Metropolitan Municipalities engaged in identifying possible projects.

1.1.5 Disposal

Infrastructure e.g. waste treatment facilities and transfer stations are not constructed as per recommended in the Municipalities IWMP and IDP. If constructed these facilities are not being utilised or being vandalised due to improper public participation processes.

In 2014 there are still municipalities operating unlicensed disposal facilities that should be closed and rehabilitated.

Limited audits are being executed at various landfill sites and there is also noncompliance in terms of monthly Committee of Control Meetings as well as quarterly Community Monitoring Committee Meetings.

1.1.6 Education and awareness

Awareness campaigns are not prioritised in various municipalities due to a lack of funding and resources.

1.1.7 Waste information system

The collection of reliable data is the biggest challenge even in municipalities where IWMP's were developed to be reviewed. Some municipalities do not keep waste records at their landfill sites (even with weighbridges).

Only a few waste characterization studies on municipal waste have been undertaken to date, in South Africa. Information from private service providers is not available as they do not want to disclose the services being rendered within municipal boundaries.

1.1.8 Financial

Most municipalities in South Africa budget inadequately resulting in a deficit for waste management services. Plans for the IWMP's developed are not implemented nor aligned with the municipalities IDP's due to a lack of funds and the prioritisation of projects.

Although external funds for capital projects are available for waste management infrastructure various municipalities are reluctant to access these funds.

1.1.9 Implementation

IWMP's can only be implemented once approved by the council of the municipality, it has been found that various municipalities may have an IWMP but the process of public consultation has not been followed.

2 BACKGROUND

In South Africa there is prescribed legislation and by-laws to control and manage waste at the various tiers of government, ie; National, Provincial and Local. The Waste Act of 2008 empowers the Minister of Environment to set standards for waste policy and planning including the provision of storage, treatment and disposal of waste. All three tiers of government are required to follow the waste hierarchy (IWMP Guideline, 2011) as shown below in Figure 1.



Figure 1: Waste Hierarchy

3 REGULATORY FRAMEWORK

The advent of a strong Waste management Regulatory Framework encompassing the National Environmental Management: Waste Act, 2008 (Act No. 59 of 2008) and the National Waste Management Strategy (NWMS) (2011) compels Municipalities in the country to implement and manage an Integrated Waste Management Plan (IWMP) and integrate it into the IDP aligning it to all services. A growing population (sprawling urbanization), additional pressure by communities on infrastructure requirements, increased demand for basic services (water, waste, and sanitation) require that an effort is made to meet the demands for the present and future.

4 SYSTEMATIC PLANNING

In developing an IWMP for a municipality or district municipality as in the case of South Africa, a systematic approach needs to be followed, allowing for all contributing and affecting variables to be considered and included as far as possible. In developing an IWMP an immense amount of research and consultation with the Waste Officials must be undertaken in order to understand where do Municipalities stand in delivering on waste management. In recent years, communities have pressurized municipal officials to meet their mandate of service delivery, often officials are left confused as to where and what to deliver. Figure 2 outlines a systematic approach in planning for waste management as a holistic approach.

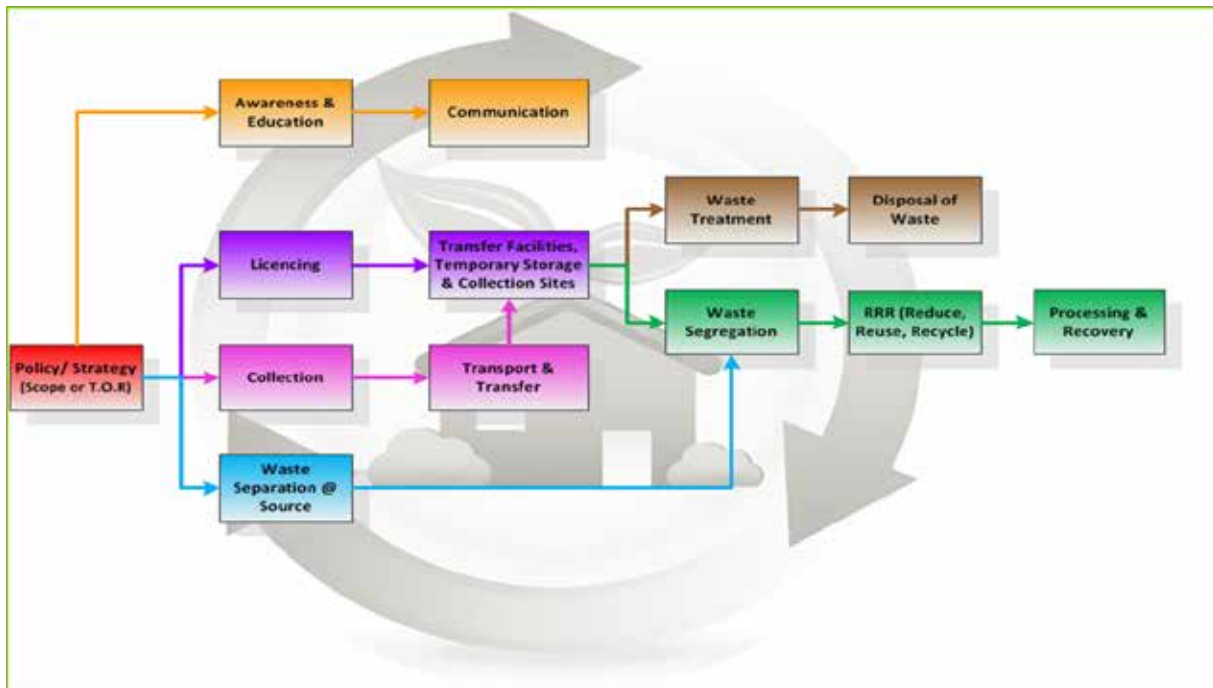


Figure 2: Waste Management Process

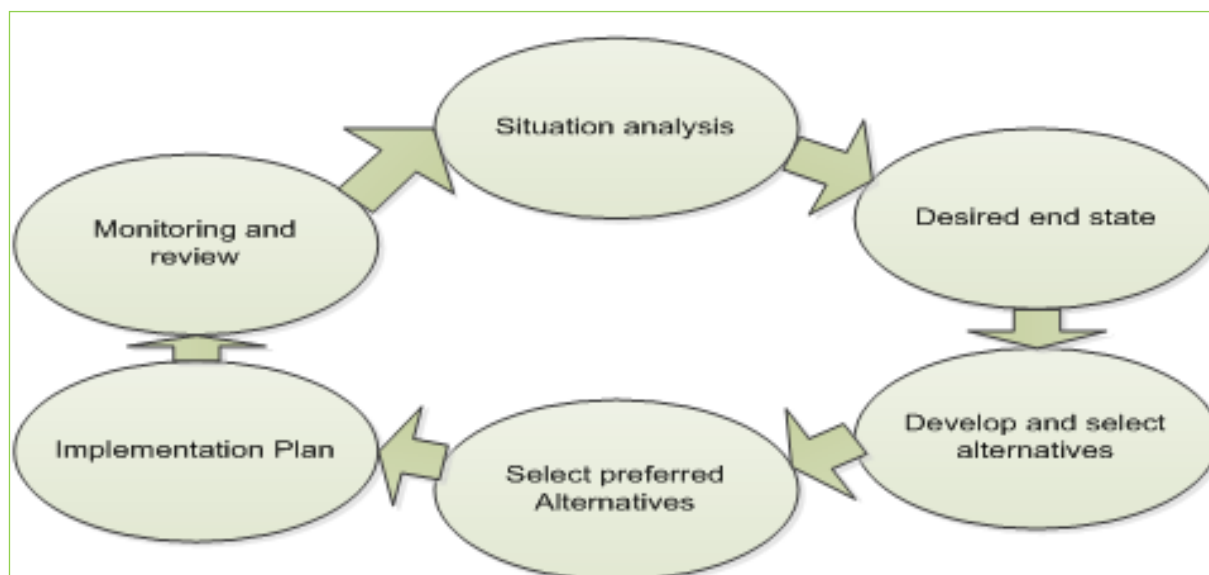


Figure 3: Integrated Waste Management Planning Process

The implementation of the waste management hierarchy and achievement of the objectives of the IWMP outlined in Figure 1 is integral to achieving a sustainable future and a better life for all South Africans. Figure 3 outlines an integrated approach and process towards developing an integrated waste plan.

Implementation requires that municipalities move away from traditional “end of pipe” solutions that focus on waste after it has been generated i.e., collection, transport, processing, recycling or disposal of waste material to a service which focuses on the prevention of waste as well as the minimisation of waste as a by-product of production. This approach is a recognition of the widely adopted waste hierarchy which includes the 3Rs of waste management (reduce, reuse and recycle) as well as energy recovery. Only after these efforts, the residual waste should be disposed of at landfill site. The delivered service must maximise efficiency and minimise environmental impacts and financial costs with the ultimate aim of improving quality of life. Any IWMP must suggest measures that are practical, achievable, implementable and sustainable.. Implementing the waste management hierarchy and achieving the objects of the Waste Act (2008) require coordinated action by many players, including households, businesses, community organisations, NGOs, parastatals and the three spheres of government.

Inadequate waste services poorly planned and maintained waste management infrastructures, and limited regulation of waste management, threaten the health and wellbeing of everyone in South Africa. Addressing this and its negative environmental and social consequences advances people’s constitutional right to a healthy environment. The IWMP aims to address imbalances in waste management.

In Implementing the IWMP, it must be noted at municipal level, the municipality plays a key role in sustainable development support, Currently one of the main challenges is that municipalities will offer one, all or none of the waste services, i.e., collection, disposal or handling. Due to constraints, municipalities will prioritize what needs to be managed, e.g., waste collection. The outlying areas where the bulk of the population (rural) are residing, does not get serviced or the accessibility to such areas proves a challenge in its own right. The waste streams generated in the rural areas are recovered (through picking or scavenging) and thus what the waste is left, is marginal and has no value. There is no integration of the informal areas into the waste planning process as the informal areas can play a significant role in the value chain.

The municipality officials do not consider the informal section contribution or understand how they could assist with the improvement and integration of waste services, e.g. .getting informal collection to the to collect waste from the rural households and have it placed at a collection point for collection by the municipality. No proper routing planning is explored for optimization of fleet, staff and collection times. There is limited use of Geographical information systems (spatial planning) in the routing design and as well as inter-action with the planning departments with regards to new townships.

5 FINANCING

Delivering an optimal waste management service requires an adequate amount of financial sourcing, however as Dukhan et al (2010) points out, municipalities rarely reach a state of financial equilibrium. In South Africa, financing and income is obtained as indicated in Figure 4:

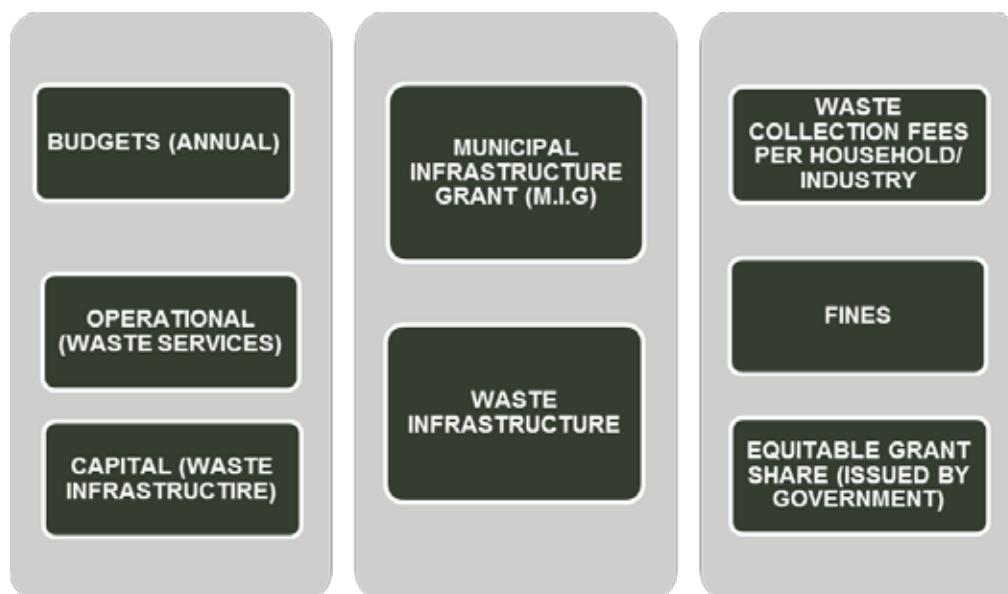


Figure 4: Municipal Financing

The income and financing is inadequate to successfully implement an integrated waste management plan. There are other options to consider and in some cases, have been explored, e.g. Public Private Partnerships, outsourcing the waste function and the establishment of Co-operatives. There are numerous barriers to entry and Busse (2010) indicates the transaction cost and limited value of the assets makes it difficult to raise capital. Determining and implementing a feasible tariff structure is a key challenge for rural municipalities as the households in these areas are very poor and the income base as per Census (2011) indicates the average household income is R500.00 to R3000.00 per month. Households in indigent areas are entitled to a free basic waste removal service as per the National Waste Act (2008).

Whilst the world moves towards implementing and adopting waste minimization strategies throughout the value chain, waste minimization and recycling initiatives provides on-going challenges for municipalities. The unemployment forces people to move into survival mode, prompting them to pick or scavenge waste from landfills. Hanrahan D. Et al, 2006 state that 10 – 15% of the waste is taken away by waste pickers. This includes (plastics, glass and metals). Parallel to the waste picking, is the destruction of waste infrastructure, risk of pickers on landfills, health and safety concerns, and interference with the daily planning and operations of the landfills.

Successfully implementing and managing a waste management plan requires evaluating proven technologies,, waste management alternatives, enhancing skill sets, collaboration between the tiers of government and the private sector. Each of these has a link and functions in cohesion, thus the integrated approach. Whilst the rural part of South Africa is in a developing phase, well-advanced technologies are often being evaluated and brought in for commissioning for specific waste management solutions. The challenge is the cost and management of such technological solutions is very high. This options is not financially and operationally viable as municipalities struggle with the waste streams required for this technology, (the high calorific value waste streams are removed from the landfill), insufficient cash to maintain and operate the technologies over the specified period and lack of capacity building to manage the technology. The capacity building is further fuelled by a poor awareness and training imperative.

A lack of or absence of waste management records i.e., Waste type information in characterization volumes, frequency and the analysis data are not available and in some cases non-existent. This is largely attributed

to no IT infrastructure, no weigh bridges on the landfills and the lack of waste management supervision at the landfills. In the South African instances, waste data at the municipalities is meant to be supplied on a regular basis onto the South African Waste Information Centre (SAWIC). This is a National Government (Department of Environment) database that provides information related to waste management at the municipal level.

59% of households receiving regular municipal waste collection services in 2010. 90% of urban and 47% of rural households have access to adequate service levels (STATS SA, 2011).

6 CONCLUSION

The regulatory requirements for municipalities to implement and adhere to an integrated waste management plan is a step in the right direction towards creating a sustainable environment. It further re-affirms the commitment towards service delivery and taking charge towards managing waste in a complete cycle and not in parts. Whilst the challenges mentioned in this paper are numerous, they can be overcome by effectively co-ordinating the overall planning and budgeting process of the municipality. A firm understanding of the legislative framework and the timelines contained in there need to be communicated and measured. The implementation and management of an integrated waste management plan can be achieved progressively in South Africa provided that there is that commitment towards sustainable waste management.

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