THE REPUBLIC OF UGANDA

OFFICE OF THE AUDITOR GENERAL

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VALUE FOR MONEY AUDIT ON THE MANAGEMENT OF MUNICIPAL SOLID WASTE BY MUNICIPALITIES

A REPORT BY THE AUDITOR GENERAL

DECEMBER, 2017

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AUDITOR GENERAL'S MESSAGE

31st December 2017

The Rt. Hon. Speaker of Parliament
Parliament of Uganda
Kampala

VALUE FOR MONEY AUDIT ON THE MANAGEMENT OF MUNICIPAL SOLID WASTE BY MUNICIPALITIES

In accordance with Article 163 (3) of the Constitution, I hereby submit my report on the value for money audit undertaken on the management of Municipal Solid Waste by municipalities.

My office intends to carry out a follow – up at an appropriate time regarding actions taken in relation to the recommendations in this report.

I would like to thank my staff who undertook this audit and the staff of the municipalities for the assistance offered during the period of the audit.

John F. S. Muwanga
AUDITOR GENERAL

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LIST OF ABBREVIATIONS

EIA	Environment Impact Assessment
MLHUD	Ministry of Lands, Housing and Urban development
MOLG	Ministry of Local Government
NEMA	National Environment Management Authority
UMCP	Uganda Municipal Composting Programme
USMID	Uganda Support to Municipal infrastructure development programme

EXECUTIVE SUMMARY

Municipal solid waste management plays an important role in the economic transformation of a country particularly mitigating the environmental and health risks posed by uncollected and untreated garbage. Management of municipal solid waste has always been a challenge in Uganda and one of the areas that require attention. Government of Uganda has made efforts both at national and local government levels aimed at improving the way Municipal solid waste is managed. This has mainly been through building the capacity of local governments to collect, transport, treat and dispose of garbage. Despite these interventions, challenges still persist in the management of municipal solid waste. This audit sought to examine the extent to which selected municipalities manage solid waste, identify the challenges faced, underlying causes and make recommendations to address them.

The audit focused on the activities and measures undertaken by the 17 municipalities in relation to planning for municipal solid waste activities: collection, transportation, treatment and disposal of the municipal solid waste generated, and activities of municipal solid waste data management. The audit covered activities undertaken in three financial years 2014/15, 2015/16, and 2016/17.

KEY FINDINGS

Based on the procedures performed, it was observed that none of the seventeen (17) municipalities assessed were managing solid waste in a satisfactory manner. Ten (10) of the seventeen (17) municipalities were managing the function in a fairly satisfactory manner while seven (7) municipalities performed below expectation. The average score for municipalities with compost plants was 61.4% while the average score for municipalities without compost plants was 47.4%. Jinja and Arua Municipalities with a score of 48% and 51% respectively, were the lowest among the municipalities with compost plants while Mityana and Busia Municipalities with scores of 26% and 40%, respectively, were the lowest amongst those municipalities without compost plants. This level of performance can be explained by a number of weaknesses within the systems for managing municipal solid waste as highlighted below:

1. Adequacy and Enforcement of the Existing Legal Framework

Only four (4) out of a sample of seventeen (17) municipalities had solid waste management byelaws that were approved by both council and the Attorney General. In the absence of approved byelaws, the municipalities cannot effectively enforce good solid waste management practices.

2. Planning for municipal Solid waste management activities

Whereas the process of formulation of a National Solid Waste management policy commenced in 2012, the policy was still in draft form at the time of audit. Without an approved policy a national solid waste management strategy cannot be developed and as such the country is exposed to a risk of disjointed planning, duplication of activities and uncoordinated management of solid waste by key players.

Whereas municipalities developed and approved strategic plans to guide the management of municipal solid waste, a number of key activities in these plans had not been implemented by the time of audit. This was mainly because the plans were unrealistic and the municipalities also did not identify sources of funding for most of the planning activities. Examples where this was noted include Soroti, Tororo, Lira, Jinja, Fort Portal. Failure to implement planned activities negates the purpose of planning, and makes it difficult to transform and improve the municipal solid waste management function within these municipalities.

3. Collection and Transportation of solid waste

The current estimated garbage collection level is forty percent (40%) of all the waste that is generated with the lowest collections noted in Hoima (8.5%), Gulu (20%), and Tororo (26%). This therefore implies that approximately sixty percent (60%) of all waste generated is not collected by the municipal system for appropriate treatment and disposal resulting in inconvenience to the public, environmental pollution, and posing a risk for public health. The low collection levels were attributed to insufficient and old collection skips, garbabge bins and trucks.

4. Treatment of collected municipal solid waste

Treatment of waste collected was not done in compliance with the NEMA solid waste management regulations or the compost plant operations manuals. In some cases the treatment process was found to be a source of pollution of the environment as was noted in Entebbe, Mityana, Gulu, and Tororo. This was mainly because of the weak supervision of the waste treatment processes.

5. Management of Solid Waste Data

It was also noted that a number of key records and documents relating to management of municipal solid waste were either non-existent or not up-to-date, which affected other activities, particularly planning and decision making. This was noted in all the municipalities with Mityana and Busia as the worst performing in this area. This was due to weak system of monitoring and follow-up by NEMA and non-prioritisation of this activity by the municipalities.

6. Assessment of the impact of municipal solid waste activities on the environment

None of the seventeen (17) municipalities undertook an annual audit of the effects of their activities on the environment for the 3-year period under review as required by the National Environment waste management regulations, partly because this activity was not provided for in the annual work plans and budgets of all the municipalities visited. There was also no evidence of follow-up by NEMA to enforce compliance with this regulation. Without a regular assessment of the effects of these activities against set benchmarks it is not possible to identify and promptly address any negative effects of the activities on the environment.

KEY RECOMMENDATIONS

1. Adequacy and Enforcement of the Existing Legal Framework

The Ministry of Lands should expedite the finalisation and approval of the national solid waste management policy. In addition, the ministry should devise means of harmonising the current municipal plans with the approved policy and national strategy.

All municipalities with draft byelaws should ensure that they are approved by both council and the Attorney General. In addition municipalities should devise ways of beefing up the current numbers of enforcement officers who oversee solid waste management. The enforcement function should also be streamlined to ensure that activities are well planned, implemented and records kept.

2. Planning for municipal solid waste management activities

As part of the strategic planning process, municipalities should endeavour to identify the funding sources and make deliberate efforts to realise the funds.

3. Collection and Transportation of Solid Waste

Municipalities should prioritise the procurement of skips and other collection equipment. They should also devise alternative cost-efficient waste collection methods and intensify the sensitisation of the public. Dumping should be closely supervised and interventions to mitigate effects of pollution should be implemented.

4. Treatment of collected municipal solid waste

Treatment should be done in compliance with the NEMA regulations and the compost plant operations manual.

5. Management of solid waste Data

Municipalities should ensure that all records in relation to solid waste management are kept and promptly updated. NEMA should also follow up with municipalities and ensure that they always have up-to-date records and data.

6. Assessment of the impacts of municipal solid waste activities on the environment

The municipalities should regularly budget and plan to undertake this activity in their budgets and activity plans. In addition, NEMA should follow-up and compel any non-compliant municipalities to undertake the audits.

OVERALL AUDIT CONCLUSION

The management of municipal solid waste in Uganda is still a challenge as demonstrated by the majority of municipalities collecting less than 50% of the waste generated.
In order to realise the broader objectives of safeguarding and promoting public health by maintaining clean towns and protecting the environment, municipalities need to prioritise the management of solid waste in their annual plans as well as strengthen the monitoring, supervision and enforcement mechanisms. Making it a key performance indicator for the town clerks and other responsible officers could be one of the ways of raising its profile.

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CHAPTER ONE

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND TO THE STUDY

Municipal solid waste (also called trash or garbage or refuse or rubbish) is a type of waste that consists of everyday items discarded by the public. Municipal solid waste management includes all activities and actions undertaken to manage solid waste from the point of generation to final disposal. This includes among other things collection, transport, treatment and disposal of solid waste accompanied by monitoring and regulation. The way municipal solid waste is handled, stored, collected, and disposed of can pose a risk to the environment and to public health. For places with intense human activities such as urban centres, appropriate and safe solid waste management is of great importance in providing healthy living conditions to residents.[1] The Government of Uganda has in the past made interventions to improve the way municipalities manage municipal solid waste. Notable among such interventions was the Uganda Municipal Composting Programme (UMCP) implemented through the National Environment Management Authority (NEMA) with support from the World Bank, and Uganda Support to Municipal Infrastructure Development Programme (USMID) implemented by Ministry of Lands. Under these interventions selected municipalities were supported to undertake planning for municipal solid waste activities, provided with municipal solid waste collection and transportation equipment, as well as compost plants to build the capacity of these municipalities to effectively treat and dispose of solid waste.

The Government of Uganda is concerned that the capacities of the municipalities to manage solid waste does not match the trend of municipal solid waste generation in the municipalities, thus the deterioration in cleanliness of the towns. Above all, current municipal solid waste management practices are unsustainable and continue to pose serious environmental and public health risks.[2]

1.2 MOTIVATION

The management of municipal solid waste, particularly solid waste generated in medium and large urban centres has become a relatively difficult problem for developing countries like Uganda and the negative environmental impacts can easily be observed. According to the United Nations (UN) protecting the environment is not an alternative to economic growth but a precondition for efficient economic development (UN 1992:25). Despite this, in many cases, municipal solid wastes are still not managed well, especially in developing countries. Solid waste collection rates are often below seventy percent while more than fifty percent of the collected solid waste is often disposed-of through uncontrolled landfilling.[3]

1 Characterisation of Municipal solid waste in Kampala.

2 Ministry of Lands, Housing and Urban development.

3 Shanghai manual: A guide for sustainable urban development in the 21st centuary

Reports continue to indicate that urban domestic solid waste management is drawing increasing attention, as citizens observe that too much garbage is lying uncollected in the streets and dustbins causing inconveniences, environmental pollution, and posing a risk for public health. Although government authorities apply all the means at their disposal, the piles of solid waste only seem to grow from day to day.[4] According to the Ministry of Lands, Housing and Urban Development (MLHUD), rapid urbanization and changing lifestyles have led to the generation of large amounts and diverse kinds of municipal solid waste in urban centres and considering that the urban population of Uganda is growing at a high rate, the level of growth of municipal solid waste is likely to even be higher.[5] Despite this, municipalities in Uganda still lack adequate resources and the amount of municipal solid waste generated daily overwhelms their collection capacity due to budget constraints. This therefore calls for interventions and initiatives, including the adoption of proven cost effective methods of managing municipal solid waste.[6]

It is against this background that the Office of the Auditor General decided to undertake a value for money audit to examine how municipalities manage solid waste, to identify the challenges faced as well as the underlying causes, and make recommendations to address them.

1.3 DESCRIPTION OF AUDIT AREA

1.3.1 General description

The management of municipal solid waste in Uganda is a decentralised function and is the responsibility of the respective Local Government.[7] The management of this function is overseen by NEMA and the Ministry of Local Government.

1.3.2 Legal Framework and Statutory Mandate

Municipalities derive their mandate to manage solid waste from the Local Government Act, Cap. 243 of the Laws of Uganda, which requires them to provide a number of services including sanitary services, removal and disposal of night soil, rubbish, carcasses of dead animals and all kinds of refuse and effluent.

1.3.3 Objectives of municipal solid waste management

The objective of municipal solid waste management is to safeguard and promote public health by maintaining clean towns and ensuring that this is done in a manner that protects the environment.[8]

1.3.4 Activities carried out by the municipalities[9]

Municipalities undertake the following activities in relation to municipal solid waste management:

- Strategic and operational planning for municipal solid waste management activities.
- Managing the processes of collection, transportation, treatment and disposal of solid waste.
- Developing byelaws, and ordinances to support the management of municipal solid waste.

4 Domestic Solid waste Background of Solid waste Management in Kampala
5 Ministry of Lands, Housing and Urban Development.
6 NEMA-2014 State of the Environment report.
7 Local Government Act CAP 243, Part 3
8 Interviews with Municipal solid waste managers
9 Ibid.

- Enforcing national laws as well as the local byelaws and ordinances on municipal solid waste management.
- Generating and keeping up-to-date data and records about all process and transactions relating to Municipal solid waste management.

1.3.5 Organisation Structure[10]

Municipal solid waste activities at the municipalities are managed by mainly three departments the Department of public health, the Department of engineering, and the Department of natural resources/environment. These departments closely work with the divisions of the municipalities.

1.3.6 Audit objective

The objective of the audit was to evaluate the management of Municipal Solid Waste in selected municipalities. This was done through an evaluation of: i) the processes of planning, collection, transportation, treatment and disposal of solid waste, ii) the adequacy of the existing legal frame work and enforcement systems to support the management of solid waste, iii) the existence, completeness and reliability of records and data relating to solid waste management.

1.3.7 Audit Questions

- To what extent does the current legal framework and system of enforcement support municipal solid waste management?
- To what extent have municipalities ensured that solid waste management activities are well planned for?
- Do the municipalities collect, transport, treat and dispose of waste in a manner that promotes sound environment management practices?
- Do the municipalities maintain solid waste management records that provide complete and reliable data?
- How do the municipalities compare with each other in terms of implementation of good solid waste management practices?

1.3.8 Audit scope and approach

The audit focused on activities and measures undertaken by the selected municipalities in relation to planning for municipal solid waste activities, collection, transportation, treatment and disposal the municipal solid waste generated, and activities of municipal solid waste data management. The audit covered activities undertaken in three financial years that is 2014/15, 2015/16, and 2016/17.

10 Ibid

CHAPTER TWO

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CHAPTER TWO

AUDIT METHODOLOGY

The audit was conducted in accordance with the International Organisation of Supreme Audit Institutions (INTOSAI) Performance Auditing Standards and the Performance Auditing guidelines prescribed in the Office of the Auditor General (OAG) Value for Money (VFM) audit manual. The standards require that the audit be planned in a manner which ensures that an audit of high quality is carried out in an economic, efficient and effective way and in a timely manner.

2.1 SAMPLING

There are currently twenty seven (27) municipalities in Uganda out of which seventeen (17) were sampled for the audit. The seventeen (17) sampled municipalities received support from government through NEMA under the Uganda Municipal Composting Programme. Of the seventeen (17), twelve (12) municipalities that is Arua, Masindi, Hoima, Lira, Soroti, Mbale, Jinja, Mukono, Fort portal, Kasese, Mbarara, and Kabale received equipment (trucks) and compost plants, while five (5) municipalities that is Busia, Tororo, Entebbe, Mityana and Gulu received only equipment (trucks). The seventeen (17) were selected to assess the progress they have made in improving their solid waste management practices.

2.2 DATA COLLECTION

The following data collection methods were used to gather evidence:

Audit Question	Data collection method
To what extent does the current legal framework and system of enforcement support Municipal solid waste management?	The team interviewed officials of the municipalities and reviewed a sample of documents such as the draft policies ,draft byelaws to confirm their existence, adequacy and whether they were approved
To what extent have Municipalities ensured that solid waste management activities are well planned for?	The team interviewed officials of the municipalities selected and reviewed documents to corroborate the information obtained through interviews. The interviews and reviews focused on practices relating to planning and budgeting, as well as the existing institutional framework. A list of persons interviewed and documents reviewed is appended as **Appendix I** and **II** respectively.

Do the municipalities collect, transport, treat and dispose of waste in a manner that promotes sound environment management practices?	The team interviewed officials of the municipalities in addition to review of documents. The team also conducted physical inspections to assess the existence, adequacy and condition of the collection and transport equipment, compost plants, and dumping grounds and carried out an inspection of various streets within the municipalities. A list of persons interviewed is appended as **Appendix I,** documents reviewed as **Appendix II,** while areas inspected are detailed in **Appendix III.**
Do the municipalities maintain solid waste management records that provide complete and reliable data?	The team interviewed officials of the municipalities and reviewed documents and data files kept by the municipalities. The purpose was to establish the existence, adequacy and accuracy of the solid waste management records maintained by the municipalities.

2.3 DATA ANALYSIS

To support the findings and conclusions, both qualitative and quantitative data was analysed. This was done to establish trends, relationships and, in some cases, to explain certain observations. The qualitative data collected was summarized, grouped and compared in order to relate findings and their causes, while quantitative data, such as, volume of solid waste collected, budget amounts and actual receipts was used to establish trends and level of performance.

2.4 SCORING AND GRADING OF PERFORMANCE

In order to assess the performance of the different municipalities an assessment tool based on a number of parameters was developed in consultation with NEMA and discussed with the municipalities.

The performance parameters used in the tool were designed in a way that evaluates how each of the municipalities are performing in the key activities and processes of managing municipal solid waste, namely: adequacy of the existing legal frame work, the effectiveness of the existing enforcement system in supporting the management of municipal waste, planning for solid waste activities, collection of waste generated, transportation of the waste, treatment and disposal of waste and maintenance of complete and reliable data about solid waste activities. Details of the assessment tool have been attached as **Appendix IV.**

For purposes of comparison the municipalities were divided into two (2) categories, those with compost plants and those without compost plants, to facilitate the comparison of results among municipalities of a similar nature.

Using the evidence gathered, the individual municipalities were scored and the scores were used to grade their performance in three performance categories that is, "Satisfactory", "Fairly Satisfactory", and "Not Satisfactory" using the grading criteria summarised in Table 1 below.

Table 1: Showing criteria used to grade performance of individual Municipalities

Grade	Score range
Satisfactory	90%-100%
Fairly satisfactory	57%-89%
Not satisfactory	Below 57%

CHAPTER THREE

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CHAPTER THREE

SYSTEMS AND PROCESS DESCRIPTION

3.1 ROLES AND RESPONSIBILITIES OF KEY PLAYERS

There are a number of key players in the processes of municipal solid waste management who play different but supplementary roles as summarised below:

The National Environmental Management Authority (NEMA)

NEMA is responsible for drafting and enforcing national laws, regulations and guidelines to guide the management of municipal solid waste. Examples include: The National Environment Act, The National Environment (solid waste Management) regulations, NEMA is also responsible for regular monitoring to ensure that municipalities implement municipal solid waste management activities in compliance with existing environment laws and regulations, and that their activities do not harm the environment. NEMA coordinates the planning and implementation of national solid waste management programmes, for example, the Uganda Municipal Composting Programme.

The Municipalities

Municipalities are responsible for all activities aimed at ensuring that the municipal solid waste management function is effectively executed. These activities include planning, budgeting, collection of solid waste generated, transporting the collected solid waste, treatment of the solid waste, disposal, development of byelaws, and enforcement of the byelaws and other national laws and regulations.

Ministry of Lands, Housing and Urban development

The ministry of Lands is responsible for ensuring that there is a national municipal solid waste management policy and strategy. The ministry is also responsible for ensuring that this policy and strategy are implemented, and that the municipal solid waste strategic plans are aligned to the national strategy and policy. In addition the ministry coordinates implementation of some aspects of municipal solid waste management through programs such as the Uganda support to Municipal infrastructure improvement programme (USMID).

The Office of the Attorney General

The Attorney General reviews and certifies that byelaws, ordinances and any other regulations drafted by the municipalities are consistent with existing laws and regulations. Once this certification is obtained, the municipalities can proceed to enforce them.

The Private Sector

The private sector includes solid waste collectors and service providers contracted to undertake some of the processes on behalf of the municipality. The private collectors collect and transport solid waste from mainly residential areas and commercial premises at a fee

to the treatment points. In some municipalities private contractors are hired to manage the operations of the compost plants.

The general public

The public generates solid waste, and are the key beneficiaries of municipal solid waste services. The public is also expected to comply with municipal solid waste laws and regulations in addition to embracing better modern municipal solid waste management practises.

3.2 PROCESS DESCRIPTION

Municipal solid waste management involves a number of processes. Some of the key processes undertaken by the municipalities include:

3.2.1 Development, Approval and Enforcement of Byelaws and Ordinances

Development and Approval of Bylaws

In addition to the existing national legal frame work, municipal councils are expected to come up with municipal specific legal framework in the form of byelaws, and ordinances. These are drafted by the technical officers and should be comprehensive covering aspects such as generation, collection, transportation, disposal, fees and charges, penalties and offences. Once the drafts are developed they are reviewed and submitted to council for approval. After approval by council, these drafts are submitted to the Attorney General for review and confirmation that they do not conflict with any existing laws, regulations and guidelines. Once approved by the Attorney General, these laws and ordinances are widely disseminated to create awareness and to foster compliance.

Enforcement of Byelaws

Enforcement of these laws is done by the municipal enforcement officers. Enforcement entails coming up with enforcement work plans and ensuring that the planned enforcement activities are undertaken. Enforcement officers conduct periodic inspections within the municipality to ascertain if the provisions of the byelaws are being complied with. This is usually done for commercial buildings and places such as markets, hotels, where cases of non-compliance are noted, and the offenders are apprehended and penalised as obligated by the byelaws. Penalties for offenders include fines, arrests and sometimes prosecutions depending on the magnitude of the offense and what the legal framework provides. All these actions should be recorded using documents such as enforcement reports, registers of offenders, registers of prosecutions.

3.2.2 Planning and Budgeting for Municipal solid waste Activities

Development of National Municipal solid waste Policy and Strategy

This is a responsibility of the Ministry of Lands, Housing and Urban Development. The process of developing a national municipal solid waste policy and strategy commences with undertaking an analysis of the existing situation. This is done through collecting and analysing data in addition to consultations with local and national stakeholders. This data is used to come up with a draft policy which is also discussed and validated by the different stakeholders during a national conference.

After the draft is validated, it is then submitted to cabinet for debate and approval. This is then followed by developing an implementation strategy through which this policy will be implemented. The national strategy details series of activities that will be undertaken in the

short term, medium term and long term-(up to 15 years).

Development of Municipal solid waste Plans and Strategy

Planning and budgeting are critical aspect in the management of municipal solid waste. Plans are both strategic (usually spanning 3-5 years) and operational covering a period of one year or less. Strategic planning begins with identification of municipal solid waste targets a municipality desires to achieve in a given time. Once this has been done, the municipality costs these activities.

The activities identified and the estimated costs form the drafts which are then forwarded to the technical planning committee for review and finally to council for approval. These plans should be aligned to the national municipal solid waste strategy and policy.

Annual planning on the other hand starts with obtaining annual Indicative Planning Figures (IPFs) from the municipal treasurer or finance department. With these, the heads of department who are responsible for municipal solid waste management, particularly the department of health, identifies activities on which these resources are allocated to come up with annual work plans and budgets. These are also presented to the technical planning committee and council for approval.

3.2.3 Collection and transportation of generated solid waste

This process involves collecting solid waste generated from the points of production, to the collection points and conveying it to the treatment and disposal points.

Collection and transportation is commonly done through either the skip/collection point system, or using the door-to-door system. Where the skip/collection point system is used, solid waste generators physically carry their solid waste to garbage skips and garbage bins provided by the municipality or to a collection point designated by the municipality. The municipality then picks the garbage and takes it to the treatment/disposal sites. Where the door-to-door collection system is used, municipal trucks or trucks of private collectors collect solid waste from the generators for example from residences, hotels, commercial building following designated routes and route plans. The solid waste is then taken by these trucks to the treatment/disposal points.

Solid waste transportation should be done using vehicles designed for this purpose, and clearly labelled to avoid solid waste spillage and contamination during transportation.

3.2.4 Treatment and disposal of the solid waste

Solid waste treatment is done through a process known as composting. Compositing is a natural process of decomposition of organic solid waste that results in the production of manure or compost. It is a biological process in which micro-organisms convert degradable organic solid waste into compost.

The process involves regular introduction of air by mechanical turning (using a wheel loader) to stimulate aerobic organisms to keep reducing the organic materials within the solid waste. This is done under controlled environment at the compost plants where parameters such as oxygen, temperature and moisture are regulated.

When the truck carrying the solid waste reaches the composting site, the data clerk inspects the truck to ensure that the solid waste delivered does not contain solid waste types that are not accepted for example medical solid waste, industrial solid waste, hazardous solid waste etc. if the solid waste is acceptable the data clerk takes the measurements of the solid waste delivered before it is offloaded onto the sorting bay. Once the skip is offloaded, sorting/ removing the non-biodegradable components of the solid waste is undertaken by sorters.

Once this pre-sorting is done, windrows are formed.

The windrows should measure 3M long x 2M wide x 1.5M high to ease aeration. Each windrow should be individually identified and should keep the same identification tag until it reaches maturity. The windrow formed is named by the date on which it was formed, the month and the year.

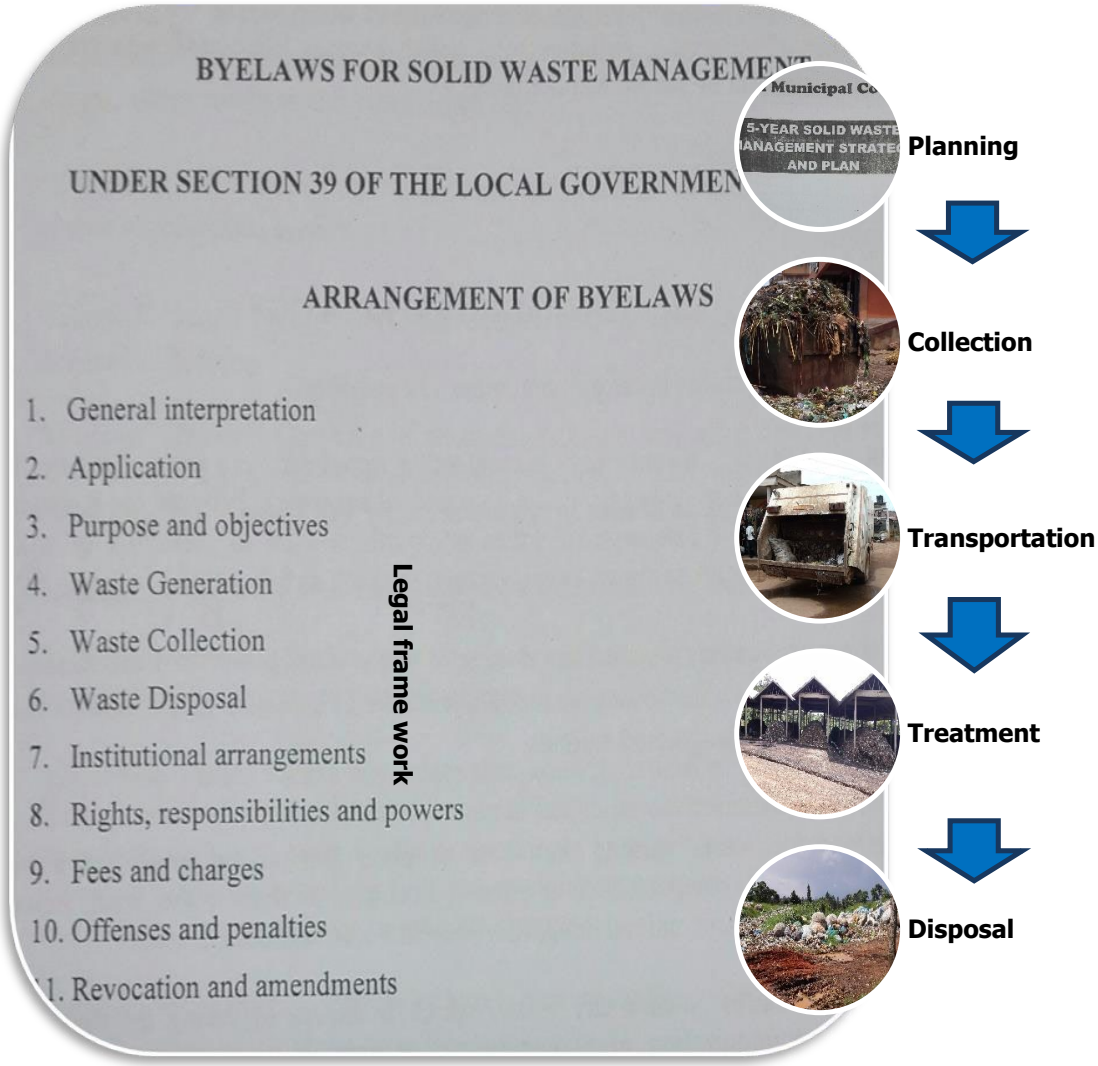
Windrows should be turned to ensure even distribution of moisture and supply of oxygen during aerobic composting. Turning time is dependent on the oxygen content, temperature and moisture content inside the windrow. At about 6-8 weeks the compost will be mature and at this point the compost can be sieved depending on the availability of labour and demand for compost. Rejects from the processes should be taken to the landfill using wheel barrows while recyclables such as plastics can be sold and recycled. For municipalities without compost plants, no treatment is done to the solid waste once it has been delivered to the dumping ground.

3.2.5 Maintenance of records and Data

An effective system of municipal solid waste management should be able to capture records. The municipality should collect and keep up-to-date data relating to solid waste volumes (e.g. volume generated, collected, treated, composition of the solid waste etc.), Human resources records (e.g. number of staff involved in municipal solid waste management), financial data (e.g. costs, Budgets, revenues), Quality assurance data (e.g. process monitoring data), Operations and maintenance data (e.g. equipment maintenance schedules), Health and Safety data (e.g. pollution levels, gases emitted, level of water and surface contamination etc.) among other forms of data.

Recording of these transactions should be done in a manner and using documents and forms prescribed by the various regulations and manuals particularly the compost plant operating manual, and the solid waste management regulations. These records are regularly updated by the records officers. They are then organised into a system where they can easily be managed and accessed.

Figure 1: Summarising key municipal solid waste management processes



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CHAPTER FOUR

CHAPTER FOUR

FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

4.1 RESULTS OF THE ASSESSMENT

Using the performance assessment tool developed in consultation with NEMA and the municipalities, the municipalities were scored in terms of implementation of good solid waste management practices such as existence and adequacy of legal framework and enforcement system to support the management of municipal solid waste, planning for solid waste activities, collection, transportation, treatment and disposal of waste, and the existence and reliability of solid waste management data.

Using these scores the overall performance of the municipalities was graded as ''satisfactory'' or ''fairly satisfactory'' or ''not satisfactory''.

The results showed that out of the seventeen (17) municipalities assessed, none (0%) achieved satisfactory performance; ten (10) municipalities representing 59% were fairly satisfactory, while seven (7) municipalities representing 41% were not satisfactory.

The results also show that of the twelve (12) municipalities with compost plants none achieved satisfactory performance, eight (8) municipalities representing 67% were found to be fairly Satisfactory, while four (4) representing 33% were not satisfactory. Similarly of the five (5) municipalities without compost plants, none achieved satisfactory performance, two (2) municipalities representing 40% were assessed as fairly satisfactory while three (3) municipalities representing 60% were not satisfactory as shown in Table 2 below.

The average score for municipalities with compost plants was 61.4% while the average score for municipalities without compost plants was 47.4%. Jinja and Arua Municipality with a score of 48% and 51% were the lowest among the municipalities with compost plants while Mityana and Busia municipalities with scores of 26% and 40%, respectively, were the lowest amongst those municipalities without compost plants.

Table 2: Showing results of the performance assessment

Municipality/ Grade	Satisfactory	Fairly satisfactory	%	Not Satisfactory	%
Municipalities with compost plants	None	Mbarara	70	Kasese	56
		Lira	61	Hoima	56
		Soroti	69	Arua	51
		Mukono	63	Jinja	48
		Fort portal	64		
		Masindi	67		
		Kabale	62		
		Mbale	70		
Municipalities without compost plants	None	Entebbe	60	Tororo	54
		Gulu	57	Busia	40
				Mityana	26

The difference in performance is a result of various areas of weakness identified in the implementation of the good municipal solid waste management practises as further discussed below.

4.1.1 Adequacy and Enforcement of the current legal framework

4.1.1.1 Existence of a National Solid waste management Policy and Strategy

In order to achieve the short term, medium term and long term municipal solid waste aspirations of the country, municipalities should plan and implement activities which are aligned with the national solid waste objectives and strategies.[11]

It was noted that there is no national solid waste management policy and strategy. Interviews with Ministry of Lands officials revealed that although the process of formulating a national solid waste management policy commenced in 2012, the policy is still in draft form pending the completion and approval of the regularity impact assessment. Without an approved policy a national solid waste management strategy cannot be developed.

This will result in disjointed planning, may result in duplication of activities and hinder coordination between the key players to achieve a common national solid waste management goal.

Recommendation

The Ministry of Lands should expedite the finalisation of the draft policy for approval by cabinet. Upon approval the ministry should devise means of harmonising the current municipal plans with the approved policy and national strategy.

4.1.1.2 Existence of Approved byelaws

It is a requirement under the Local Governments Act 1997 for urban councils to make byelaws in relation to their powers and functions that are not inconsistent with the constitution, any law made by parliament or ordinance of the district council or any byelaw passed by a higher council. The byelaws should be certified by the Attorney General that they are not inconsistent with the constitution or any other law enacted by parliament before they are enforced.

11 Guidelines for national solid waste management strategies (United Nations Environment Programme)

Through document review and interviews, the audit team noted that whereas all municipalities except Mityana had drafted byelaws relating to municipal solid waste management, these byelaws were at different levels of approval by the time of audit (October 2017) as summarised in Table 3 below:

Table 3: Showing status of approval of solid waste byelaws

Status of approval	Number	Municipality
Approved by both council and Attorney General	4	Busia, Masindi, Kasese, and Mbarara
Approved by Council only	6	Tororo, Arua, Gulu, Lira, Soroti, Hoima
Drafts without any Approvals	6	Jinja, Entebbe, Mbale, Fortportal, Kabale, Mukono
No draft Bye-laws	1	Mityana

Source: OAG Analysis

Without approvals by both the Council and Attorney General, these byelaws cannot be used to support solid waste management activities since they are not enforceable.

Management response

Draft byelaws were submitted to the Attorney General for approval. However, the process is slow and takes time. The municipalities currently use other existing national laws to support the solid waste management function.

Audit Comment

No evidence was provided by the municipalities to confirm that the draft byelaws were actually submitted to the Attorney General for approval.

Recommendations

- All municipalities should ensure that they put in place the relevant municipal solid waste bylaws as required under the Act.
- All municipalities with draft byelaws should ensure that the drafts are approved by both council and the Attorney General.

4.1.1.3 Enforcement

It was observed that the current system of enforcement was not effective in supporting solid waste management. In sixteen (16) of the seventeen (17) municipalities assessed, the enforcement function was characterised by absence of work plans for enforcement activities, poor record keeping (evidenced by missing registers of offenders, missing registers of prosecutions, missing records of fines and penalties and so on). In addition the number of enforcement officers was insufficient in most of the municipalities. Only one municipality (Mbale) had an enforcement officer specifically deployed for solid waste management.

Table 4: Summarising Solid waste enforcement system

Municipality	Enforcement Work plans	Enforcement Record (Registers of offenders, Prosecutions, fines penalties etc.)	Solid Waste Management Enforcement officers
Hoima	×	×	×
Masindi	×	×	×
Kasese	×	×	×
Fort Portal	×	×	×
Kabale	×	×	×
Mbarara	×	×	×
Mityana	×	×	×
Arua	×	×	×
Gulu	×	×	×
Lira	×	×	×
Jinja	×	×	×
Soroti	×	×	×
Mbale	√	×	√
Tororo	×	×	×
Busia	×	×	×
Entebbe	×	×	×
Mukono	×	×	×

Source: OAG interviews and review of Documents

√-Work plans complete and up-to-date records, and sufficient enforcement officers exist.

× No work plans, incomplete and not-up-to-date records, and insufficient enforcement officers

The weaknesses in enforcement were attributed to non-prioritisation of the activity through adequate planning and resource allocation.

A weak system of enforcement negatively affects the effective administration of byelaws and other NEMA regulations and guidelines which are critical in supporting the solid waste management function.

Management Response

Enforcement has been a challenge due to the few enforcement officers and the freeze by Ministry of Public Service in relation to recruitment of additional staff by government entities. This is worsened by the fact that the existing few enforcement officers have to be deployed to more priority areas such as revenue mobilisation.

Audit comment

The freeze on recruitment of additional staff by the Ministry of Public service only affects those municipalities that cannot demonstrate capacity to meet the additional staff costs that result from additional recruitment. Once a municipality demonstrates that it has the resources to meet these extra costs, a waiver is usually granted.

Recommendation

Municipalities should devise ways of enhancing the capacity of the enforcement function by increasing the numbers of enforcement officers particularly those overseeing solid waste management. The enforcement function should be streamlined to ensure that activities are well planned, funded, executed and records kept.

4.1.2 Planning for Municipal Solid waste management activities

4.1.2.1 Implementation of planned activities

Strategic planning forms the basis for implementation of strategies and activities planned for the achievement of the long term goals and objectives. These should be detailed into annual work plans and budgets for implementation.

It was observed that the majority of the municipalities had put in place approved 5 year solid waste management plans (for the period 2016/17 to 2020/21) except the municipalities of Mityana, Kasese, Busia, and Mukono. However, a review of the implementation of activities planned for the year 2016/17 revealed that key planned activities remained either partially or not implemented at all. Examples of the critical activities not implemented include those shown in Table 5.

Table 5: Highlighting Examples of unimplemented activities

Municipality	Unimplemented activity
Jinja	Undertaking a full cost accounting exercise for solid waste management services
Arua	Training of political and community leadership on solid waste management issues, develop an operations and business plan for the compost and recovered materials
Lira	Develop and disseminate information, education, and communication materials on solid waste management and environment and health risks
Soroti	Developing a solid waste cost model
Tororo	Feasibility and detailed design for EIA for sanitary land fill at Mukuju
Fort portal	Hire consultant to design and install waste information system, develop service area map and collection route
Hoima	Support collection in informal settings and slum areas, develop and disseminate Information and education materials on solid waste management issues.
Kabale	Promoting participation and involvement of private and informal sectors
Mbarara	Develop information and education materials on waste segregation, reuse, recycle and reducing waste.

Source: OAG analysis of the 2016/17-2020/2021 strategic plans

Part of the problem is that the strategic plans were largely unrealistic as the cost of financing far exceeds the resources available and the municipalities did not identify the sources of financing for these activities during the implementation period 2016/17 to 2020/2021. As illustrated in Table 6, the cost of financing the activities does not compare well with the resources accessible by municipalities.

Table 6: Comparing Strategic plan costs and actuals received for 2016/17

Municipality	Total cost of the strategic plan activities for 2016/17 (Billions)	Total annual budget for 2016/17 (Billions)	Total Actual Receipts for 2016/17 (Billions)	Percentage of actuals receipts to strategic plan cost
Jinja	1.15	0.66	0.48	0.42
Lira	0.97	0.25	0.21	21
Soroti	1.09	0.30	0.22	20
Tororo	0.89	0.10	0.07	7.9
Fort portal	1.08	0.23	0.20	18.5
Hoima	1.19	0.35	0.32	26.9
Kabale	1.09	0.43	0.38	34.9

Source: OAG analysis of strategic plans, 2016/17 solid waste budgets and receipts

Failure to implement planned activities negates the purpose of planning, and makes it difficult to transform and improve the municipal solid waste management function within these municipalities. For example, there is little community involvement and participation of key stakeholders in solid waste management mainly because the planned sensitisations in municipalities such as Arua, Lira, Hoima, and Kabale were not implemented.

Management Response

The activities remained unimplemented due to lack of funds. What the municipalities receive is very little compared to the needs. It is true that some activities may not be achievable using what the municipalities regularly receive, these activities are included in the plan in anticipation of assistance from mainly development partners and other stake holders who may come on board in the course of implementation of the strategic plans.

Audit Comment

Although the municipalities include some of these activities in anticipation of assistance from development partners who may come on board during plan implementation, the municipalities had not demonstrated that they were actively and deliberately sourcing for this assistance.

Recommendation

As part of the strategic planning process municipalities should endeavour to identify the funding sources and make deliberate efforts to realise the funding. Where funding falls short, the plans should be reviewed and revised.

4.1.3 Collection and Transportation of solid waste

4.1.3.1 Collection of solid waste

The Local Government Act obligates urban councils to manage municipal solid waste through interventions such as: maintaining sanitary services for the removal and disposal of night soil, rubbish, dead animals and all kinds of refuse, procurement and management of refuse tipping sites, road sweeping, among other activities.

Through interviews and review and analysis of documents and waste management records, it was established that the level of collection of solid waste generated within the municipalities was still unsatisfactory. The current average estimated collection is 40%[12] of all the solid waste

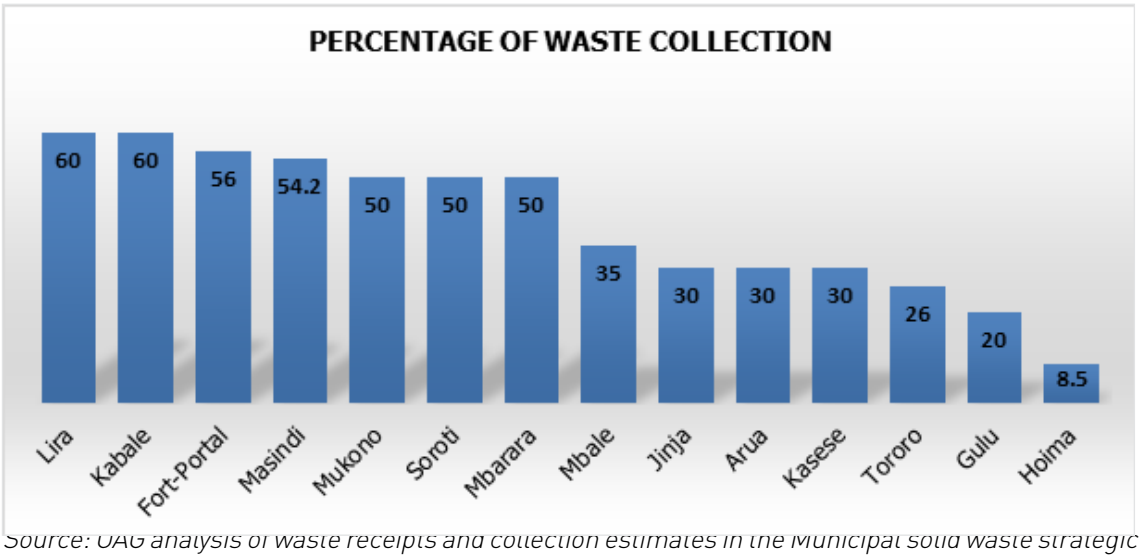
12 This was computed using collection estimates from Municipalities that provided data.

generated with only four municipalities collecting more than 50% of solid waste generated as illustrated in Figure 2 below:

From the assessment undertaken, the average municipal council score in relation to collection of waste generated was 10.5 marks out of the available twenty five (25) marks for this parameter. Only five (5) of the assessed municipalities managed to score more than half of the available marks.

In most of these municipalities solid waste collection is mainly in areas of high visibility (roads and Streets), business centres (such as markets, and abattoirs) and residential areas where people are willing to pay.

Figure 2: Showing estimated Volume of solid waste collected by each Municipality



Source: OAG analysis of waste receipts and collection estimates in the Municipal solid waste strategic plans (No data was provided by Entebbe, Busia, and Mityana)

The low collection levels were attributed to insufficient and old collection skips and garbage bins as well as shortage of functional garbage collection trucks in some municipalities. Table 7 below analyses the existing skip in some of the municipalities while Figure 3 figure illustrates the condition of some of the skips.

Table 7: Showing shortages in skips in some municipalities

Municipality	Desired number of skips	Existing number of skips	Shortage (number)
Arua	100	22	78
Gulu	40	26	14
Hoima	30	20	10
Jinja	200	32	168
Kabale	42	22	20
Kasese	26	5	21
Tororo	40	12	28

Source: OAG Interviews and review of documents

Figure 3; Showing samples of garbage skips taken during inspections.

Source: OAG pictures taken during inspections

The collection and transportation trucks were also insufficient, old and unreliable, and would frequently break down causing interruptions in the collection. This was exacerbated by the irregular maintenance which sometimes results in grounding and in service interruptions as observed in Soroti, Hoima, and Masindi.
Table 8 below analyses the shortages in collection trucks for some municipalities while Figure 4 shows the condition of some of the collection trucks by the time of audit.

Table 8: Showing shortage of trucks in some municipalities

Municipality	Desired number of Trucks	Existing number of Trucks	Shortage (number)
Arua	15	6	9
Gulu	18	7	11
Hoima	9	5	4
Jinja	9	3	6
Mbarara	11	5	6
Tororo	10	4	6
Mukono	10	6	4
Soroti	12	3	9

Source: OAG interviews and review of fleet maintenance records

Figure 4: Showing the condition of some of the garbage collection truck

Garbage trucks found grounded at Soroti vehicle yard	A skip loader found grounded in Hoima	A skip loader found grounded in Masindi

Source OAG inspection picture

In addition, people dispose of waste using inappropriate disposal methods such as dumping solid waste in storm water drainage channels and illegal collection points. These practices are mainly due to the low public sensitisation. Figure 5 below highlights some of the cases where this was observed.

Figure 5: Illustrating cases of inappropriate garbage disposal

	
An example of garbage dumped along the road drain in Mukono Municipality.	One of the illegal garbage collection points along the Kampala-Mable high way in Mbale Municipal council.

Source: OAG photos taken during inspection

There has also been limited sensitisation which has not been effective in most cases. The results of the assessment indicated that only six (6) municipalities scored more than three (3) marks of the five (5) marks allocated for sensitisation. This would popularise strategies like the 3R principle of reduce, reuse and recycle which would reduce the amount of garbage generated. Failure to collect solid waste exposes the environment to pollution since solid waste that is not collected finds its way to the environment through uncontrolled disposal means. The insufficient number of collection skips also forces people to dump solid waste around the few skips which may result in contamination of the surface. Figure 6 below highlights cases where garbage was dumped around skips.

Figure 6: Illustrating Impact of insufficient skips

		
Garbage littered around skips in front of Jinja Market	Garbage littered around one of the collection points in Kasese	Garbage littered around one of the collection points in Fort portal

Source: OAG inspection photos taken during inspections

Although Figure 6 above highlights cases in three municipalities, this challenge is prevalent across all the municipalities.

Management Response

The collection equipment that is, skips and trucks are too old, few and very expensive to replace. The cost of collecting the garbage (fuel, repairs and maintenance etc.) is also high given the limited resources which impair the ability of the municipalities to adequately collect waste. There is need to do more sensitisation of the public and undertake interventions on how to manage waste at household level. However, sometimes to be efficient, a municipality does not have to collect 100% of the waste generated since some of the waste generated is managed by the people through back yard composting.

Audit Comment

Encouraging backyard composting may be counter-productive since some of the uncollected solid waste is generated from areas such as slums where people have no space for backyard composting. In addition, municipalities may not have the capacity to monitor and ensure that people who are supposed to be practising backyard composting are not instead inappropriately disposing of this solid waste through practices such as burning and dumping garbage in drainage channels.

Recommendations

Municipalities should prioritise the procurement of skips and collection equipment. They should also devise alternative cost-efficient waste-collection methods and intensify sensitisation of the public. Maintenance of collection trucks should also be prioritised.

4.1.3.2 Transportation of solid waste collected

Through inspections, it was observed that with the exception of Busia Municipality, solid waste collected from all the municipalities sampled was transported and delivered to the dumping ground or compost plant. In the case of Busia, however, no solid waste was delivered to the dumping ground during the three year period of assessment. A visit to the dumping ground revealed that the place was covered in bushes without any sign of garbage as illustrated in the Figure 7 below.

Figure 7: Showing the garbage dumping site in Busia

Only foot paths and bushes were found at the site with no sign of rubbish. This is a clear indicator that there hasn't been any serious human activity for some time	Entrance to the site exhibited no signs of regular truck movement.

Source: OAG inspection photographs taken during inspection

Garbage collected was dumped in people's gardens, open spaces, and bushes along the way to the dumping site as shown in Figure 8 below. This practice was facilitated by the absence of an effective system for supervising and monitoring the drivers of the garbage trucks.

Figure 8: Instances where rubbish disposed along a road in Busia

Case where garbage was openly dumped in an open space along Tororo-Busia road.

Source; OAG pictures taken during inspection

According to management sometimes the garbage was sold to farmers who perceive it to be rich in manure. It was not possible for the municipality to account for where and how all the solid waste collected for the three-year period of audit was dumped, treated and disposed of.

Management Response

Busia has developed a solid-waste-collection tracking tool detailing collection of solid waste signed by drivers on supervision of the principal health inspector. A records book has also been opened and the Municipality is committed to strengthening the use of the records book. The drivers of the trucks have also been cautioned in writing to transport garbage to Osapiri dumping site.

Recommendation

Busia Municipality and NEMA should investigate the Busia Municipality scenario and take appropriate action. NEMA should follow up and confirm existence and implementation of the measures instituted by Busia Municipality.

4.1.4 Treatment of Solid waste by municipalities

4.1.4.1 Treatment of solid waste by municipalities without plants

Regulation 14 (3) of the national environment (solid waste management) regulations states that a person licenced to own or operate a solid waste treatment plant or disposal site shall ensure that the solid waste treatment or disposal site is operated in a way which: a) avoids polluting surface and underground water; b) avoids the emission of noxious smells from the plant or site to levels beyond standard; c) prevents the breeding of rats, mosquitoes and other vermin at the site or plant.

Through interviews and physical inspections, the audit established that municipalities without composting plants, namely: Entebbe, Gulu, Tororo, and Mityana openly dumped solid waste at the site without any form of treatment measures to control pollution. On average these municipalities scored three[13] (3) of the maximum ten (10) available marks on this parameter. Municipalities also scored very low on parameters such as the existence of landfill manuals, fencing and accessibility of the dumpsite, and existence of adequate supervision and management over the operations at the dump site. In municipalities like Tororo, Gulu, and Entebbe, for example, there were no managers to oversee the dump site. Data clerks were deployed to manage these sites but they were also not always present at the sites.

13 The average excludes Mityana since there was no data availed.

The manner in which these sites are currently operated makes them sources of pollution to the surface, air and underground water through emission of noxious smells, landfill gases, and filtration of leachate to the ground. In some cases stagnant leachate was observed at spots within the dumping ground as was the case in Entebbe, while in others, namely Gulu there was no way of controlling improper disposal activities such as garbage burning. These sites were also breeding grounds for vermin particularly mosquitoes and rats. Figure 9 below highlights some of these observations.

Figure 9: Highlighting challenges of open dumping

		
Sections of dump site in Entebbe with stagnant leachate	In Tororo garbage was found dumped in the middle of an access road around the site	A heap of garbage found burning at the dump site in Gulu.

Source; OAG pictures taken during field inspection

The challenges of open dumping faced by these municipalities have also been partly caused by the delay to mobilise the requisite assistance for the construction of the compost plants. Records showed that the municipalities had already invested close to 379 million in preparation for construction of compost plants but the required funding had not materialised as summarised in Table 9 below.

Table 9: Showing investment made to prepare sites for construction of plants

Municipality	Amount (Millions)	Purpose	Comment
Gulu	119	Procurement of land, fencing it, provision of water and conducting and an Environment Impact Assessment (EIA)	During inspection the site was found fenced but with a grown bush because of no activity.
Tororo	148	Procurement of land, fencing it, provision of water and conducting an Environment Impact Assessment (EIA)	During Inspection the site was found fenced without any activity.
Entebbe	No Data	No Data	The proposed site for the construction of the plant is currently used as a dumping ground and it is partially fenced.
Busia	55	Procurement of land, fencing it, provision of water and conducting an Environment Impact Assessments (EIA)	During inspection the site was found fenced but with an over grown bush and no activity.

Mityana	56.5	Procurement of land, fencing it, provision of water and conducting an Environment Impact Assessment (EIA)	The site is currently being used as a dumping ground however most of the garbage is dumped at the entrance since there are no internal roads.
Total	**378.5**		

Management Response

These dump sites are to be abandoned in anticipation of the new compost plants from NEMA.

Audit Comment

As municipalities wait for the anticipated funding, they should avoid operating the dumpsites without mitigating the risks associated with open dumping such as pollution to the ground surface and air.

Recommendation

Dumping should be closely supervised and controlled and the staff responsible for managing the dump sites should also be supervised. This should be aimed at mitigating the effects of pollution to the surface. In order not to put to waste the investments so far made, NEMA should engage with the implementers of the programme to ensure that these five municipalities are given priority when selecting beneficiaries.

4.1.2.4 Treatment of Solid waste by municipalities with compost plants

The municipal solid waste composting project operations and monitoring manual highlights key indicators of proper aerobic composting process. The manual indicates that the process of composting may not be going on well when there is smell/odour and flies which is an indicator of the presence of anaerobic conditions, when the temperature is too low (below 500) in the first five weeks and high (above 700) after the fifth week, too much leachate, and low oxygen concentration below 10%. In addition, the manual also details what civil works are expected at compost.

Results of the assessment showed that the average score in relation to how waste is treated by municipalities with compost plants was 6.2 marks out of the maximum of fifteen 15 marks. All municipalities in some cases scored no mark at all on some parameters. Most of the municipalities scored very low on parameters such as adherence to performance conditions temperature, moisture and oxygen. There was no evidence to confirm that the plants were operating within the designed operating capacity and conditions, and that the rejects from the process were inappropriately disposed of.

There are examples where the current composting process revealed that the process in some cases was proceeding anaerobically rather than aerobically as required. Table 10 below compares indicators of anaerobic composting as prescribed by the operations manual to what was noted during the audit.

Table 10: Highlighting possible indicators of anaerobic composting

Indicator as per the manual	Audit Finding	Implication.
Presence of smell/odour/ and or flies could be a sign that the process is proceeding anaerobically.	Flies were found at all the plants visited. Some of the plants visited namely Hoima, Masindi, Kabale and Jinja emitted abnormal odour as noted during inspection	This could be an indicator of presence of anaerobic conditions.
Too low temperature (below 50^0) in the first five week and high temperatures of above 70^0 after the fifth week is an indication that something is going wrong.	This parameter was not regularly monitored at ten (10) of the twelve (12) compost plants mainly due lack of temperature meters. Municipalities affected include Jinja, Hoima, Arua, Soroti, Lira, Masindi, Kasese, Kabale, Mbale, etc.	It is not possible to guarantee aerobic composting without regularly monitoring this parameter.
Too Much leachate after 2 weeks is an indication of anaerobic conditions -no leachate should be seen after two weeks	Some Municipalities such as Jinja, Arua, Hoima, Soroti and Mbale, had signs of leachate draining out of windrows that were older than two weeks. (refer to Figure 10)	This could be an indicator of presence of anaerobic conditions.
Low oxygen concentration. Oxygen levels should always be above 12%	This parameter was not regularly monitored at 10 plants due to lack of Oxygen meters. Municipalities include Jinja, Hoima, Arua, Soroti, Lira, Masindi, Kasese, Kabale, Mbale, etc.	It is not possible to guarantee aerobic composting without regularly monitoring this parameter.

Figure 10: Showing indications of excess leachate from windrows

		
Leachate was found draining out of windrows at Mbale the compost plant.	Leachate was found draining out of windrows at the Jinja compost plants	Leachate was found draining out of windrows one of the compost plants

Source: OAG photos taken during inspection

**The windrows at these compost plants were more than two weeks at the time of audit.*

Anaerobic conditions also result in increased pollution of the environment because of the noxious

smells and odour associated with the process. Non-adherence to the conditions of the treatment process reduces the municipality's likelihood to earn carbon credits since these are core during assessment.

Management Response

Operational parameters such as oxygen, temperature and moisture are not regularly monitored because gadgets for measuring these parameters that is, the oxygen and temperature meters were not functional and spare parts are not easily available given that very few companies in the country deal in such equipment.

Recommendation

Municipalities should ensure that non-functioning oxygen and temperature meters are immediately replaced and operational parameters regularly monitored as guided by the municipal solid waste composting operations and monitoring manual to ensure composting is strictly undertaken under aerobic conditions.

4.1.4.3 Existence and maintenance of civil works around the treatment areas

It is a requirement under the National Environment (Solid waste management) Regulations for every person who operates a solid waste treatment plant or disposal site to take all necessary measures to prevent pollution from the site or plant including the erection of necessary works and instituting of mitigation measures. The person licenced to own or operate a solid waste treatment plant or disposal site should ensure that the plant or site is enclosed and secured from scavengers.

Physical inspections of the plants and dump sites revealed that some compost plants and dump sites lacked key civil works. In other cases the existing works were not well maintained as summarised in Table 11 and detailed in **Appendix V**.

Table 11: Condition of civil works at plants and dumping sites visited.

Condition of Civil Works	Finding
Existence of a separately identifiable Landfill at the compost plant for disposal of rejects	None of the compost plants had a clearly identifiable landfill for disposal of rejects. The rejects were disposed-off in the open within the premises of the plants
Presence of fence and gate	Sections of the fences and gates were vandalised and never replaced in Jinja, Mbale, Hoima, Arua, Tororo and Entebbe. In Kasese and Kabale sections of the gate were found missing. This resulted in unrestricted access to the site.
Maintenance of existing civil works	There was poor maintenance of works around some of the plants as evidenced by broken and blocked drainage pipes and channels as was the case in Soroti, Jinja, Hoima, and Lira. In Lira audit observed that sections of the plant roof had been blown off and not replaced.

Unrestricted access exposes the public to health risks and diseases and facilitates uncontrolled scavenging. Figure 11 below illustrated some of the observations in Table 11 above.

Figure 11: Showing some of the effects of the missing civil works

		
The unrestricted access to the plant area in Jinja encouraged cyclists to use it as a short cut to town.	Animals grazing within the premises of the compost plant in Mbale	Children were at sometimes found at dump sites scavenging as was observed in Entebbe

Source: OAG photos taken during Inspection.

Management Response

Measures are being undertaken to put in place the required civil works.

Recommendation

NEMA should follow up and ensure that the affected municipalities have promptly fixed the missing gates and replaced the vandalised fences. In future municipalities should ensure that there is regular maintenance of the civil works around the plants and dump sites.

4.1.5 Data Management and Monitoring

Regulation 24 of the National Environment (Solid waste Management) Regulations, states that a holder of a licence to own or operate a solid waste treatment plant or disposal site shall a) Keep a record of the licenced activity and all transactions related to it, b) submit the records to NEMA every six months from the commencement of the licenced activity. Regulation 23 of the same regulations requires a person licenced to carry out any activity under the regulation to submit bi-annual reports on the conduct of the licenced activity to NEMA.

A review of documents and interviews with municipal officials revealed that a number of key documents were either non-existent or not up-to-date as summarised in Table 12 table below. The average score for the assessed municipalities in regard to existence and completeness of data was 4.2 marks out of a ten (10) available marks with municipalities like Mityana and Busia scoring no mark. This was due to weak system of monitoring and follow up by NEMA and non-prioritisation of this activity by the municipalities.

Table 12: Summarising existence and completeness of key records

Municipality	Solid waste receipts	Fleet tracking system	Windrow monitoring reports	Activity supervision reports	Integrated data management system
Hoima	√	×	×	√	×
Masindi	√	×	×	√	×
Kasese	×	×	×	×	×
Fort Portal	√	×	×	√	×
Kabale	√	×	×	√	×
Mbarara	×	×	×	√	×
Mityana	×	×	×	×	×
Arua	√	×	×	√	×
Gulu	×	×	×	×	×
Lira	√	×	×	×	×
Jinja	×	×	×	×	×
Soroti	√	×	×	×	×
Mbale	√	×	×	×	×
Tororo	×	×	×	×	×
Busia	×	×	×	×	×
Entebbe	×	×	×	×	×
Mukono	√	×	×	√	×

Source; OAG analysis of documents reviewed

X-Non-Existent or Not up-to-date. √-Existent and up to date

Management Response

Maintenance of records is still a challenge. However steps are to be taken to ensure that complete records are kept and regularly up-dated.

Recommendation

Municipalities should ensure that all records and data in relation to solid waste management are kept and promptly up-dated. NEMA should follow-up with the municipalities and ensures that up-to-date records and data on municipal solid waste are kept.

4.1.6 Assessment of the Impacts of municipal solid waste activities on the environment

Operators of a solid waste treatment plants or disposal site should all carry out an annual audit of the environmental performance of the sites and submit the reports to NEMA. Through document review and interviews, audit established that none of the seventeen (17) municipalities undertook an annual audit of the effects of their activities on the environment for the three year period under review. The audit team noted that this activity was not provided for in the annual work plans and budgets of all the municipalities visited. There was also no evidence of follow-up by NEMA to enforce compliance with this regulation.

Most of the municipalities explained that undertaking such assessments was costly and there were no resources to undertake the exercise. Without regular assessment of the effects of these activities against set benchmarks it is not possible to identify and promptly address any negative effects of the activities to the environment.

Management Response

Municipalities are challenged by lack of resources to undertake these audits but have noted the gap. We will endeavour to assess the effects of these activities on the environment in compliance with the regulations.

Audit comment

Although management of the affected municipalities attributed this to scarcity of resources, there is no evidence that these municipalities prioritised the activity by budgeting and allocating resources to it.

Recommendation

The municipalities should regularly budget and plan to undertake this activity in their budgets and activity plans. In addition, NEMA should follow up and compel the non-compliant municipalities to undertake the audits.

OVERALL AUDIT CONCLUSION

The management of municipal solid waste in Uganda is still a challenge as demonstrated by the majority of municipalities collecting less than 50% of the waste generated. In order to realise the broader objectives of safeguarding and promoting public health by maintaining clean towns and protecting the environment, municipalities need to prioritise management of solid waste in their annual plans as well as strengthen the monitoring, supervision and enforcement mechanisms. Making it a key performance indicator for the town clerks and other responsible officers could be one of the ways of raising its profile.

GLOSSARY OF TERMS

Aerobic	Is a natural biological degradation; and purification process in which bacteria that thrives on oxygen rich environment breakdown and digest solid waste.
Anaerobic	A biological process that involves the breakdown of organic matter by micro-organisms in the absence of oxygen to produce methane and carbon dioxide
Composting	Is a biological process in which organic matter present in solid waste is converted into compost/manure
Fairly Satisfactory	The Municipality to a large extent met the minimum expectations on a number of parameters used in the assessment tool. However there is still room for improvement.
Not Satisfactory	The Municipality to a great extent performed below expectations on a number of parameters used in the assessment tool and more needs to be done.
Satisfactory	The Municipality exhibited outstanding performance on a number of performance parameters used in the assessment tool.

APPENDICES

APPENDIX I: DOCUMENTS REVIEWED

S/N	Document	Purpose
1.	MoUs between NEMA and the Municipalities for the different forms of support extended.	To confirm the existence if the MoUs and ascertain the type of assistance that NEMA gave to the various Municipalities and the conditions of this assistance.
2.	National and Municipal specific Acts, Rules, regulations, guidelines and byelaws.	To comprehend the legal frame work guiding Municipal solid waste management activities.
3.	Municipal council Municipal solid waste strategic plans/Development plan	To confirm the existence of these plans and to establish the strategic Municipal solid waste management goals and assess the achievement of these targets.
4	Sensitization strategy for 2016-2021	To confirm the existence of the sensitatisation strategies and ascertain how Municipalities plan to create awareness about Municipal solid waste in the future
5	Municipal solid waste management budgets and work plans for 2014/2015, 2015/2016 and 2016/2017.	To confirm the existence and completeness of the budgets or work plans. To ascertain how resources are allocated, and the level of budget performance.
6	Annual and quarterly Municipal solid waste activity progress reports.	To confirm the existence and establish the extent to which Municipal solid waste activities have been implemented by the Municipalities
7	Procurement plans for the 3 years under review.	To confirm the existence of the procurement plans and ascertain if Municipal solid waste management activities are included as part of the Municipal procurement processes
8	Contracts/ MoUs with private garbage collectors.	To confirm the existence and establish if Private collectors are operating legally and have valid contracts with the Municipalities.
9	Monitoring/ supervision reports of private garbage collectors.	To confirm the existence of supervision reports and establish if the Municipalities supervise activities of the private garbage collectors
10	Municipal solid waste unit/ department staff structure(s)	To ascertain any staffing gaps in the structures that manage Municipal solid waste in the Municipalities
11	Compost plant management manuals	To confirm the existence of these manuals and establish if these are followed during the process of composting.
12	Periodic plant Operations Reports submitted to NEMA	To confirm the existence, completeness and reliability of reports prepared and submitted to NEMA by the Municipalities.

APPENDIX II: INTERVIEWS CONDUCTED

	Designation	Purpose of the Interviews
1	Town Clerks	To ascertain the administrative arrangements for managing Municipal solid waste activities in the Municipalities
2	Municipal Health Officers	To establish the processes of Municipal solid waste management such as Planning, collection, sensitatisation, supervision, data management and other processes managed by the department.
3	Municipal Environment Officers	To ascertain the environment aspects and implications of Municipal solid waste management and how the department relates with the other departments in Municipal solid waste management.
4	Municipal Health Inspectors, and enforcement officers	To ascertain if inspections and enforcement activities are undertaken and to the challenges faced.
5	Compost Plant Managers and dump site Managers	To comprehend the operations of the Compost plants and the dump sites and the challenges that are faced.

APPENDIX III: PLACES AND SITES VISITED

Place visited	Number	Reason for the visit
Compost Plants	12	• To ascertain the current operational conditions of the compost plants. • To assess if the process of composting was undertaken in accordance with the compost plant operations manual.
Dump Sites	5	• To ascertain the current operational conditions of the Dump Sites.
Proposed Relocation Sites (Busia, Gulu, Tororo, Mityana)	4	• To confirm if the sites were prepared as required by NEMA before construction of the plants. • To establish what the sites are currently being used for.
Towns-Arua, Busia, Entebbe, Fort portal, Gulu, Hoima, Jinja, Kabale, Kasese, Lira, Masindi, Mbale, Mbarara, Mityana, Mukono, Soroti, Tororo.	17	To conduct a physical inspection of a sample of streets and commercial building in order to establish if the buildings had temporary storage facilities, if the towns had skips and garbage bins and if the streets were well swept.

APPENDIX IV: ASSESSMENT AND SCORING TOOL FOR VFM AUDIT ON MUNICIPAL SOLID WASTE MANAGEMENT IN URBAN COUNCILS

THEME	ASSESSMENT PARAMETER
Theme 1: Legal framework	
To establish the existence and assess the adequacy of SWM laws and regulations.	Existence of approved Solid waste byelaws, ordinances and regulations.
	Comprehensiveness of the byelaws, ordinances and regulations
Theme 2: Institutional arrangement	
To assess the adequacy of the Solid Waste Management structure.	Approved Staff structure for the department responsible for solid waste management
	Extent to which the staff structure is filled
	Adequacy of casual solid waste management staff
	Casual workers have contracts, recruitment policy and casual handling policy
	Effectiveness of casual worker's pay roll management and internal controls
Theme 3: Planning and budgeting	
To assess the comprehensiveness of the solid waste management planning and budgeting process.	Existence of approved 3 to 5 year strategic work plan
	Approved solid waste management annual budget & work plans
	Procurement plans entail solid waste management activities.
	Extent of work plan implementation.
Theme 4: Sensitization/public awareness	
To assess the promotion of public participation and inclusion in solid waste management	Existence and implementation of a sensitization strategy
Theme 5: Placement/temporary storage and collection	
To determine the effectiveness of garbage collection by the Municipality, the availability and suitability of solid waste storage containers/ collection points.	Adequacy of garbage skips/ collection areas
	The effectiveness with which Municipalities collect waste generated.
	Commercial buildings have placement/temporal storage containers.
	Suitability of temporal storage containers provided by the Municipality
To determine the adequacy of solid waste management working tools and protective gears	Availability and suitability of tools
	Possession of Personal Protective Equipment (PPE)
	Condition of Personal Protective Equipment
Theme 6: Management of private collectors/ contractors	

To assess the management and supervision of Private garbage collectors	Licensing of private garbage collectors/ contractors
	Whether private collectors/contractors have valid
	Contracts with the Municipality detailing the Terms of reference (TOR), code of conduct, performance goals and zones to operate?
	Private collectors/contractor use of vehicles for the licensed purposes
	Supervision of private collectors by Municipal staff
Theme 7: Transportation	
To determine and assess the adequacy of solid waste management fleet/vehicles.	Availability of solid waste management fleet/vehicles (Municipality vehicles)
	Functionality of the solid waste management fleet/ vehicles
	Existence of solid waste collection Route plan
	Adherence to route plans (Frequency and timing of garbage collection)
Theme 8(A): Disposal and treatment (compost plants)	
To assess the operations and activities at the Compost plant in relation to the requirements of the plant operations manual and other environment regulations.	Existence of a plant Management/operations manual.
	Adherence to key performance standards (temperature, oxygen and moisture)
	Whether the plant is within its operating capacity
	Whether the Plant has a land fill for proper disposal of rejects
	Whether there is Restricted access to the plant
	Plant meets the expected revenue projection from sale of compost
	Proper record keeping for all plant activities at the plant
	Operation and maintenance of civil works around the plant
Theme 8 (B): **Disposal and treatment (landfill/open dump sites)**	
To assess the operations and activities at the dumping ground in relation to dumps management manuals and other environment regulations.	Existence of a landfill/open dumps management manual.
	Proper record keeping for all activities at the dumping ground
	Whether there is restricted access
	Operation and maintenance of civil works around the land fill
Theme 9: **Enforcement**	
To assess the enforcement of solid waste management byelaw/guidelines/ordinance	Existence of enforcement plans and implementation of enforcement activities.
	Existence of records in relation to enforcement activities
Theme 10: Information management	
To assess the adequacy of the Waste Information system	Existence of Key Municipal solid waste management records and tracking of waste data
Theme 11: management of impact solid waste management activities on the Environment	
	Existence, approval and implementation of EIA report/ environment audit recommendations

APPENDIX V: SHOWING CONDITIONS AT SOME OF THE TREATMENT PLANTS.

Municipalities	Audit Comments		
Jinja	• The plant was not completely fenced off and part of the plant area was used as a short-cut to town by residents. • There was evidence of broken pipes and blocked Drainages • Sections of the area within the plant premises were flooded with leachate making the place unsightly		Sections of the fence were there was no wire mesh
			Flooding within the plant area caused by blocked drainage channels
Lira	• Sections of the composting Plant had no roof after it was blown off by wind and never replaced • The water tank was also found broken and un-usable •		Unroofed windrows that were blown off by wind
			A broken water harvesting tank

Kabale and Mbarara	• Half gates were found at these Municipalities making it difficult to restrict access. •		Half of the gate missing at Kabale treatment Plant
			Half of the gate missing at Mbarara treatment Plant
Hoima	• There was no gate at the plant • There was also no fence • The internal roads were poorly maintained • And the leachate tank was found over-flowing		Picture showing stagnant water on the upper side of the windrows
			Over flowing leachate

Entebbe, Tororo, and Mbale	• These Municipalities were found without fences to keep away intruders. • In some cases sections of the dump sites were flooded with leachate which ends up contaminating the ground and makes the area unsightly		Unfenced boundary of the dumpsite which allows free access to the dumpsite by scavengers in Entebbe
			One of the spots around the dumpsite filled with stagnant leachate at the Entebbe dumping Ground
			Sections of the boundary were not fenced at the time of inspection in Mbale.
			Entrance to the dumpsite does not have fence or gate to restrict access to the site in Tororo

THE REPUBLIC OF UGANDA

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