



COUNTY GOVERNMENT OF NYERI



NYERI MUNICIPALITY SOLID WASTE MANAGEMENT POLICY



November, 2020

ACRONYMS

EMCA:	Environmental Management and Coordination Act CAP 387
EIA :	Environmental Impact Assessment
NLC :	National Land Commission
CBD :	Central Business District
RFP :	Request for Proposal
3Rs :	Reduce, Recycle, Reuse
7Rs :	Rethink, Refuse, Reduce, Repurpose, Reuse, Recycle, Rot
ISWM :	Integrated Solid Waste Management
EOI :	Expressions of Interest
UNEP :	United Nation Environmental Programme
UN :	United Nation
CS :	Civil Society
NGOs :	Non-Governmental Organizations
CSR :	Corporate Social Responsibility
GIS :	Geographic Information System
PPP :	Public Private Partnership

EXECUTIVE SUMMARY

Solid waste management remains one of the development challenges globally, nationally, Countywide and at the municipality level. Solid waste is inevitable due to ordinary human activities such as industrial production, consumption at household level, construction and commercial processes among others. However, managing solid waste has health, environmental, social and economic implications. Consequently, public interventions in solid waste management coupled with engagement with private actors are required in order to achieve optimal results.

In order to comprehensively address solid waste management, a framework setting the policy direction to be pursued by the Municipal board, County Government and other stakeholders is essential. The policy provides for the guiding framework for solid waste management in the municipality. The policy shall guide the municipality solid waste management actors providing effective, efficient and sustainable services while utilizing solid waste as an economic resource

The Solid waste management policy consists of six chapters as follows;

Chapter one gives the background information on solid waste management, challenges and what the policy aims to achieve. It also gives the policy development process, geographical location and size, administrative structure, demographic context, social and economic context.

Chapter two discusses the situational analysis of waste production, most common forms of solid waste generated in the municipality is the organic waste which is mainly generated at household level and agricultural produce/food markets, hotels and restaurants. Inorganic waste such as e-waste, glass bottles, plastics, construction waste and junk are also produced but in low quantities. Public and private health facilities generate biomedical waste.

This chapters also outline the solid waste management conceptual framework, waste streams and sources, functional elements of solid waste management system, integrated solid waste management and policy principles.

Chapter three highlights the policy and legislative framework for municipal solid waste management. It also highlights the laws and policies that relate to solid waste management at County level. These consists of Constitution of Kenya, 2010 and various Statutes, Sessional papers and Sectoral plans. These includes; Environment Management & Coordination Act (cap 387), National Environment Policy, 2013, Kenya vision 2030, National Solid Waste Management Strategy, 2015, Global Policy related to Solid Waste Management, County Government Act, 2012, Public Finance Management Act, (Cap 412c), Urban Areas & Cities Act, 2011, Physical Planning Act No.6 of 1996 and Legal Notice No.137 on Transfer of functions to County Government, 2013.

Chapter four describes the policy framework consisting of the core policy measures to be pursued. In addition, the chapter lay out the policy rationale, goal, objectives, vision, mission and guiding principles.

Chapter five illustrates how the policy will be designed to provide feedback to stakeholders to ensure accountability, transparency, facilitate appropriate decisions on future implementation and review of the policy to ensure that the input delivery, work schedules and target outputs are progressing according to the plan.

The chapter outlines the implementation framework to be followed in implementing Municipal Integrated Development Plan, these includes, Institutions responsible for the actualization of the plan, resource requirement and mobilization

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CHAPTER ONE

1.0 BACKGROUND

1.1 Introduction

Solid waste management remains one of the major development challenges globally, nationally, countywide and at the municipality level. Solid waste is inevitable due to ordinary human activities such as industrial production, consumption at household level, construction and commercial processes among others. However, managing solid waste has health, environmental, social and economic implications. Consequently, public interventions in solid waste management coupled with engagement with private actors are required in order to achieve optimal results.

This policy provides for the guiding framework on solid waste management in the Nyeri municipality. The policy shall guide the municipality solid waste management actors providing effective, efficient and sustainable services while utilizing solid waste as an economic resource.

1.2. Policy development process

This policy was developed through a consultative process. The key policy actors in solid waste management in the municipality were engaged during the preparation process. Specifically, National and County governments departments involved in solid waste management, which included National Environment Management Authority (NEMA), County departments in charge of public health, public works and trade were consulted. In addition, private actors in solid waste management such as solid waste collectors and transporters, resident associations, waste sorters and recyclers participated in the process.

1.3. Geographic location and size

The municipality is located in the Central region of Kenya. It is situated between longitudes 36°56' 51.32"E and latitudes 0°25'12.47"N. The County covers a total area of 3,356Km².

1.4. Administrative structure

The Municipality consists of five wards namely; Rware, Kiganjo/Mathari, Gatitu/Muruguru, Ruring'u and Kamakwa/Mukaro. Each ward is represented by a member of the County Assembly.

1.5 Demographic context

According to 2009 population census, the County has a population of 119,273 people (Kenya National Bureau of Statistics). However, currently, the population is estimated to be 158,872 by 2022.

1.6. Social and economic context

1.6.1. Social context

a) Poverty index

As per the 2009 census, the county poverty index was 32.7% .The above analysis shows that the Nyeri municipality highly contributes to this index. The areas mostly affected are slums in Majengo, Kiawara, Ruring'u and other highly dense areas like Ngangarithi.

b) Education

In terms of education, a total of 34% County residents has secondary level education. A total of 54% County residents have primary level education. The level of education has implications to the level of uptake of the solid waste management policy measures such as information, adoption of modern solid waste management practices and investment in solid waste management.

1.6.2. Economic context

The main forms of economic activities (industrial and trade) in the municipality are trade, manufacturing, tea farming, coffee farming, dairy farming, agriculture, tourism, healthcare and financial services. The economic activities that have high generation of solid waste in the municipality are trading and industrial.

1.6.3. Urbanization

The main urban areas in the County are Nyeri municipality, Othaya, Karatina, Narumoru, Chaka, Mukurweini and Mweiga town. The rising urbanization in the municipality results to increase in the quantities of solid waste produced.

This has resulted in increase in demand for solid waste management services. Consequently, the municipality has to strategically plan for the development of sustainable solid waste management.

CHAPTER TWO

2.0 SITUATIONAL ANALYSIS AND CONCEPTUAL FRAMEWORK

2.1 Situation Analysis

Solid waste management is be a major area of concern to the municipality. The most common forms of solid waste generated in the municipality is the organic waste which is mainly generated at household level and agricultural produce/food markets, hotels and restaurants. Inorganic waste such as e-waste, plastics, glass bottles, construction waste and junk are also produced but in low quantities. Public and private health facilities generate biomedical waste. The waste characteristic is estimated to be as enumerated in the table 2.1 below:

Table 1 solid waste characterization

Type of waste	Percentage
Organic	51%
Plastics	11%
Paper and paper products	9%
Glass	5%
Metals	2%
Inerts such as sand, rubble, dirt etc.	4%
Others	18%

Solid waste generated in the rural parts of the municipality is disposed within the households mainly through disposal in pits or open burning. Most of biodegradable waste such as agricultural or human food waste is reused as food for farm animals or it is composted to produce manure for agricultural production. Non-biodegradable waste, such as containers (plastic, glass, cans etc.) are reused for other house hold uses such as storage. Urban areas within the municipal, industrial waste is in substantial quantities due to high population density.

The municipal board faces a myriad of challenges when it comes to waste management disposal. First and foremost, the municipal board has made budgetary allocation for solid waste

collection but the allocations have been below the desired financial investment for solid waste management. There is no proper waste management systems that have established due to meager resources allocated for its management. Further, there lacks adequate technical and institutional capacities to manage waste. This has led to the current poor state of waste management which includes a lack of waste segregation, uncollected waste, poor transportation and indiscriminate dumping.

Most of the solid waste generated in urban areas is disposed in open grounds. Solid waste is disposed in the same form as it was generated without being recycled, reused or recovered. Open disposal of solid waste has continuously posed negative environmental health impact through leachate and direct flow into water sources. In addition, the disposal methods in the municipality have been a contributor to public nuisance. There is limited investment in solid waste recycling and recovery systems in the County at large.

Collection and transportation of solid waste generated at household, commercial and industrial level in the municipality is mainly undertaken by the government which provides solid waste collection and transportation services from the public areas. The County government has put in place light waste collection bins and waste collection receptacles in strategic places in urban areas. Inadequate waste bins in the urban settlement and the already existing ones are not well utilized for waste segregation and disposal. This however is below the desired optimal level and is characterized by low uptake in terms of usage by the public due to information gap.

Waste transportation in the municipality is largely rudimentary, using open trucks and tractors. The inadequacy in transportation modes has led to littering and open dumping, making waste an eye-sore, particularly plastics in the environment.

The municipality also faces the challenge of lack of enough waste collection trucks whereby one truck serves more than two sub-counties. Poor maintenance of the available trucks, which break down often due to the many kilometers traversed, combined with a tedious procedure when it comes to vehicle repairs has also posed a greater challenge in that waste is not collected

consistently as per the schedule therefore leading to accumulation of waste in the designated areas. This greatly inhibits efficient and effective waste service delivery.

Poor infrastructure in the informal settlements has led to improper waste disposal due to lack of adequate waste collection points and inaccessibility of the areas.

These places lack designated areas where waste can be disposed awaiting collection and transportation. The indiscriminate waste disposal has led to blocking of drainages which eventually causes water pollution and poses health risks to the people and causes environmental degradation. Furthermore, access of the waste collection trucks is a challenge due to lack of structured road networks within the settlements which then leads to improper waste disposal due to long-term accumulation of waste. This leads to environmental pollution, loss of natural aesthetic value and reduced environmental quality.

Disposal of waste in Nyeri remains a major challenge as the County has not gazetted and designated proper and adequate disposal sites, nor established a modern waste management facility. There exists no sanitary landfill in the County, which is the minimum environment standard set for a disposal site.

The municipality has one dumpsite at Asian quarter, which has not been registered and remains undesignated. The dumpsite is poorly managed and do not meet the prescribed environment health standards. Moreover, land has not been designated for waste management in the land use plan of the County, as waste disposal is not classified as a land use. Also, the County lacks enough excavators and bulldozers which are used in the management of dumpsite. This has caused improper dumping due to the inaccessibility of sections of the dumpsite. The improper dumpsite management is a great threat to the health of the nearby households and the environment including the air, soil and water sources.

Further, there exists a weak waste management system in terms of segregation, recycling and recovery and waste treatment. There is limited awareness and knowledge on the importance of a clean and healthy environment in the municipality, which has translated to poor practices by the public towards waste management. There is poor handling of waste at the household level

including a lack of segregation, reuse, reduce and recycling of waste produced. A negative attitude towards waste management and failure to take individual responsibility has also contributed to practices such as littering, illegal dumping and open burning, which has led to environmental pollution.

Though not ideal, minimal recycling is taking place at one of the existing dumpsites, in collaboration with youth groups. This is at a very small scale and only on paper and nylon. There is need to create a system and regulations on recycling and involvement of other stakeholders as well as mainstreaming the process to begin from the point of source. The lack of recycling is denying a stream of revenue for both the County, as well as job opportunities to those who would be involved. This is also limited due to the contamination of materials to be recycled due to the mixing of waste.

Other than waste treatment of biomedical waste, water waste and small-scale pyrolysis by one youth group, from collected plastic at the dumpsite, neither established nor alternative methods of waste treatment are being undertaken at the municipality. This leads to fast accumulation of the dumpsites with materials that would otherwise have been beneficial such as manure from composting, or reduce disposal space by large fractions such as gasification.

Political good will is key to the ultimate success of proper waste management in the country. Unfortunately, the waste management agenda has not been prioritized in Nyeri County, leading to poor investments and funding. That notwithstanding, there is an increase in involvement of the private sector and increased employment opportunities in waste management through diverse waste-based enterprises (waste as a resource). There also exist external financial resources from development partners, and investors and investment opportunities in recycling, composting, incineration and energy recovery among others.

Further, there are opportunities in adoption of emerging technologies in waste management, increased public awareness on waste management and related opportunities, opportunity to implement the existing environmental regulations and the County Government is investing in

sustainable and integrated modern waste management systems for a healthier state of environment and people in the County.

2.2. Solid Waste Management Conceptual Framework

Solid waste emanates as a result of human activities. The term “waste” in common terms implies something that has no value and that should be discarded. Management of solid waste is a public issue that has health, environment, economic and social effects at household, local, national and international level.

The level of waste generation is directly related to population size, human behavior such as production (including production processes) and consumption patterns and management, recovery or utilization of waste products at the point of production or intermediate level. Waste generated at one point may be raw materials for another production process which forms a key component of the circular economy.

2.2.1 Waste Streams and Sources

Solid waste management is based on identifiable waste streams from the various identifiable sources. Waste is ordinarily classified according to the waste streams for purposes of effective management. A waste source may produce different waste streams e.g. a household may produce food and kitchen waste, agricultural waste, glass bottles, papers and e-waste. There are different methods of collecting, recovering, processing, treating and disposing the various waste streams. The common waste streams are outlined in table 2:-

Table 2 municipality waste streams

Waste Streams	
<ul style="list-style-type: none"> ▪ Food, kitchen and garden waste <ul style="list-style-type: none"> ▪ Automotive waste (oil, tyres, end of life vehicles (or vehicle parts) ▪ Paper and cardboard ▪ Agricultural waste 	<ul style="list-style-type: none"> ▪ Ferrous metals (iron and steel) ▪ Non-ferrous metals (aluminum, copper, lead) ▪ Construction and demolition waste

- | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <ul style="list-style-type: none"> ▪ Textiles ▪ Mining waste ▪ Electrical and electronic waste (e-waste) ▪ Glass bottles and glass related waste | <ul style="list-style-type: none"> ▪ Special health care waste ▪ Sewage sludge ▪ Batteries, expired chemicals and pharmaceuticals |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|

The most common waste sources are outlined in table 3 below: -

Table 3 waste sources

Waste Sources	
<ul style="list-style-type: none"> ▪ Households ▪ Fishing and fish processing facilities ▪ Offices ▪ Cafes and restaurants, hotels, food stalls ▪ Schools, universities, laboratories ▪ Retail operations (e.g.shops,supermarkets,warehouses) ▪ Markets ▪ Public facilities (sports grounds, street sweeping and cleaning) Hospitals and other health care facilities ▪ Mines and mineral processing facilities ▪ Agriculture and food processing facilities 	<ul style="list-style-type: none"> ▪ Forestry operations ▪ Building sites ▪ Manufacturing facilities ▪ Water treatment and sewerage treatment facilities ▪ Land transport facilities (e.g. truck depots, bus and train stations and terminals) ▪ Car yards and car repair shops ▪ Ships and aircraft (airports, ports, marinas)

Whereas there are different waste streams, waste is normally divided into hazardous and non-hazardous waste. The manner of managing the two types of waste is very different due the potential health risks and hazardous as provided for in the Environmental Management and Co-ordination (Waste management) Regulations 2006 Legal notice No. 121. Waste may in addition be classified broadly as municipal solid waste or industrial waste and post-consumer waste.

One of the key concepts in solid waste management is municipal solid waste. Municipal solid waste is regarded as waste generated by households and waste of similar nature generated by

commercial and industrial premises, institutions such as schools, hospitals and other facilities inhabited by people, construction and demolition of buildings, and from public spaces such as streets, markets, slaughter houses, public toilets, bus stops, parks and gardens.

2.2.2 Functional Elements of a Solid Waste Management system

Functional elements of a solid waste management system describe the value chain in the core functions of a solid waste management system. Regulatory and management system for solid waste management is mainly based on the functional elements. Table 4 below describes the functional elements of a solid waste management system:-

Table 4 functional elements of a solid waste management system (or waste elements systems)

Functional element	Description
Waste generation	Encompasses activities in which materials are identified as no longer being of value and are either thrown away or gathered together for disposal
Waste handling at source, separation, storage and processing	Involves activities associated with managing wastes until they are placed in storage containers for collection. Handling also entails the movement of loaded containers to the point of collection. Separation of waste components at source facilitates effective handling and storage of waste, particularly for recycling and reuse purposes.
Collection	Includes gathering of solid wastes and recyclable materials and the transport of these materials, after collection, to the location where the collection vehicle is emptied, such as materials processing facility, a transfer station, or a landfill
Transfer and transport	Involves two steps (a) transfer of wastes from the smaller collection vehicle to the larger transport equipment (b) subsequent transport of wastes, usually over long distances to a processing or disposal site. Transfer normally takes place at a transfer station

Separation, processing and transformation of solid waste	Entails separation of waste and recovery or processing of waste materials, which had been separated at source. This takes place at materials recovery facilities, transfer stations, combustion facilities and disposal sites. Transformation processes are used to reduce the volume and weight requiring disposal and to recover conversion products and energy. Combustion (to produce energy) and composting are some of the most common transformation processes.
Disposal	Disposal by landfill or land spreading is the ultimate destination of solid waste whether its waste collected and transported from source or from transformation facilities (e.g. residues of composting or combustion). The best practice is to dispose waste through sanitary landfill which prevents public health hazards and nuisances

Source: Kieth and Tchobanoglous (2002), *Handbook of Solid Waste Management*, McGraw-Hill, USA.

2.2.3 Integrated Solid Waste Management (ISWM)

The modern approach to effective and sustainable waste management is what has come to be commonly referred to as the Integrated Solid Waste Management (ISWM). This integrated approach has been advanced by United Nations Environment Programme (UNEP) and the UN-Habitat. The approach may be viewed from different analytical frameworks. The UNEP and UN-Habitat have developed 2 complementary analytical frameworks on ISWM. The analytical frameworks are the “two-triangles” ISWM analytical framework advanced by UN-Habitat and the Waste Management Hierarchy advanced by UNEP.

a) two-triangles” ISWM analytical framework

The “Two triangles” analytical framework categorizes solid waste management system into two pillars (triangles) i.e. the physical elements and governance features. Figure 1 below outlines the “Two-triangle” analytical framework.

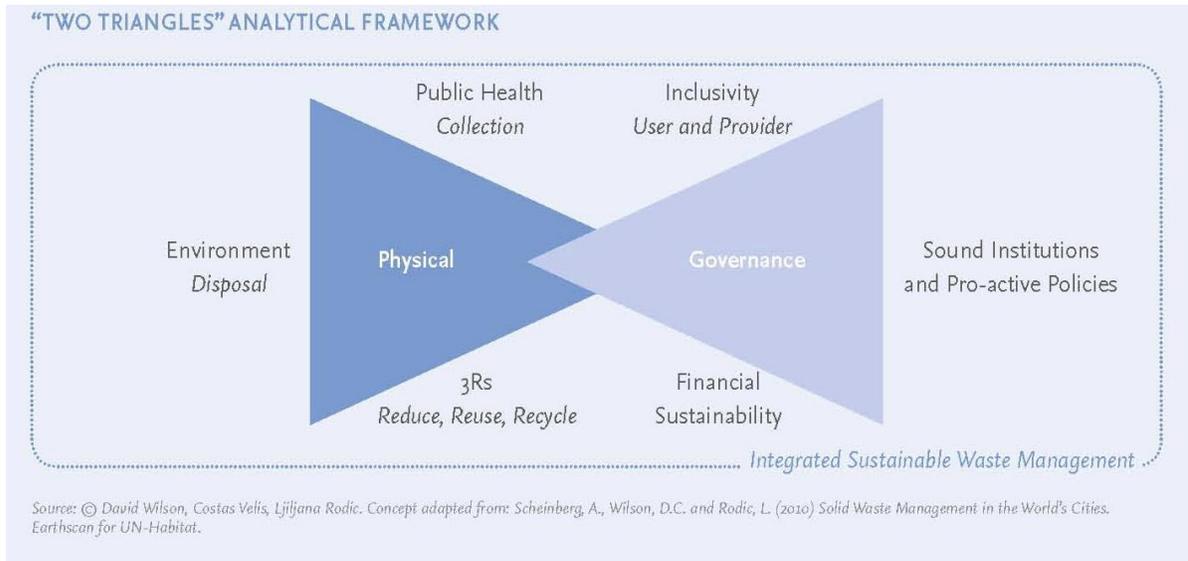


Figure 1 two triangle analytical framework

The first triangle comprises the three key physical elements of the ISWM system, which are–

- i. **Public health** which entails maintaining healthy conditions in cities and urban areas through a good waste collection service.
- ii. **Environment** which entails protection of environment throughout the waste chain, especially during treatment and disposal.
- iii. **Resource management** which may be described as ‘closing the loop’ since it entails returning both materials and nutrients to beneficial use, through preventing waste and striving for high rates of organics recovery, reuse and recycling.

The second triangle comprises of the governance features of the ISWM system, which supports sustenance of the first triangle. The governance features entail a system that–

- i. is **inclusive**, providing transparent spaces for stakeholders to contribute as users, providers and enablers.
- ii. is **financially sustainable**, which implies cost-effective and affordable waste management system.
- iii. rest on a base of sound institutions and pro-active policies.

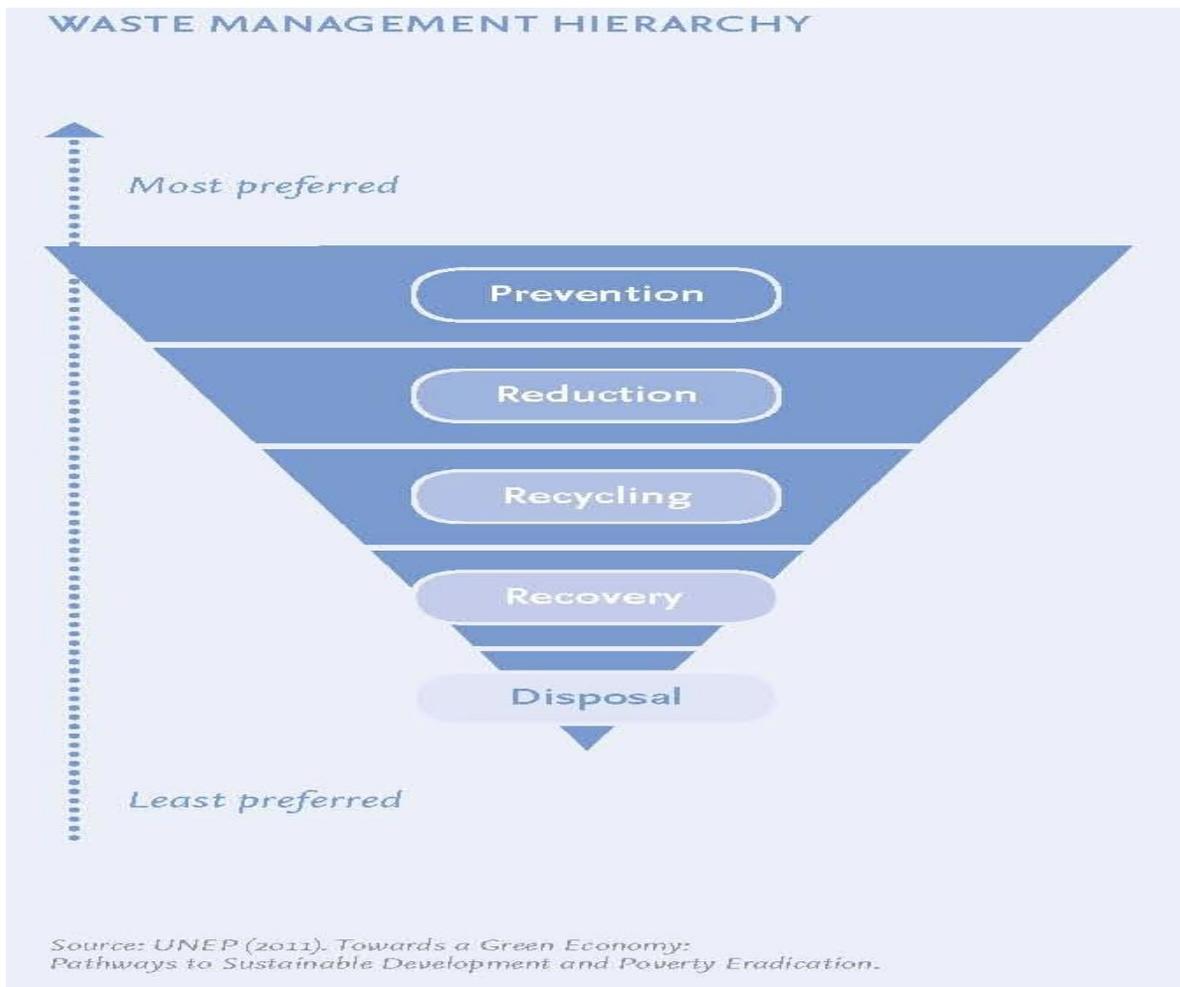


Figure 2 waste management hierarchy

b) Waste Management Hierarchy ISWM analytical framework

The waste management hierarchy indicates an order of preference for action to reduce and manage waste. The waste hierarchy is presented as an inverted pyramid with the most preferred action being prevention of waste generation followed by reduction of waste generation (e.g. through re-use), followed by recycling (including composting or anaerobic digestion), followed by material recovery and waste-energy processes such as combustion and pyrolysis and the final action being disposal either in landfills or through incineration without energy recovery for waste that was not prevented, diverted or recovered.

The ISWM system forms a good foundation for solid waste management policy framework and strategy development.

2.2.4. Policy Principles

The following shall be the guiding principles for the solid waste management policy: -

- a) ***Proximity principle*** which implies that waste should be managed close to where it is generated.
- b) ***Self-sufficiency principle*** which implies that where possible and practical, each urban area or zone should manage its own waste.
- c) ***Polluter pays principle*** whereby those who generate waste should bear the cost of managing the waste to minimize risk to human health and the environment.
- d) ***Precautionary principle*** whereby appropriate policy measures may be taken in order to safeguard human health and environment. Even if scientific evidence is not conclusive it would be essential to adopt precautionary approach.
- e) ***Sustainable development*** which is development that meets the needs of the present without compromising the ability of future generations to meet their own needs.
- f) ***Inter-generational equity*** which implies that waste should not be managed in a way that bequeaths legacy problems to subsequent generations.
- g) ***Intra-generational equity*** which implies that waste management resources and services should be equitably accessible to all citizens or residents in the same generation. All interested parties should have equitable possibilities to provide services and equitable burden-sharing in terms of waste management facilities (environmental justice).
- h) ***Participatory approach principle*** which considers consensus and all inclusion in the management of solid waste. It ensure active involvement of all stakeholders involved in solid waste management.

CHAPTER THREE

3.0 LEGAL AND INSTITUTIONAL FRAMEWORK

The policy and legislative framework for municipal solid waste management consist of the Constitution of Kenya and various Statutes, Sessional papers and Sectoral plans among others. This part highlights the laws and policies that relate to solid waste management at County level.

3.1. Constitution of Kenya

Article 10 entrenches sustainable development as one of the national values. Solid waste management is one of the key drivers of sustainable development.

Article 42 of the Constitution provides for every person has a right to clean and healthy environment.

Article 43 guarantees the right to highest attainable standard of health, reasonable standards of sanitation and clean and safe water. Solid waste is a major contributor to prevalence of risk factors to communicable and non-communicable diseases and conditions. Consequently, effective, efficient and sustainable management of solid waste especially in urban areas has will drastically reduce incidences of communicable or non-communicable diseases and conditions and related health care burden as well as reduce associated public nuisance of unmanaged solid waste.

Article 69 of the Constitution provides for encouragement of public participation in the management, protection and conservation of the environment; establishment of systems of environmental impact assessment, environmental audit and monitoring of the environment; elimination of processes and activities that are likely to endanger the environment.

Section 2 (g) of the Fourth Schedule assigns to the County government the function of refuse removal, refuse dumps and solid waste disposal.

3.2 The Environmental Management and Co-ordination Act (Cap 387)

The Environmental Management and Co-ordination Act, Cap 387 including subsidiary legislation is the main national statute that governs environment protection, conservation and management, which includes solid waste management. In regard to solid waste management, the Act provides among others for–

- a) development of County environment action plans which provide for environment management systems.
- b) the standards of waste including issues such as handling, storage, transportation, segregation and destruction of any waste.
- c) prohibition of handling dangerous waste.
- d) classification and management of hazardous and toxic waste.

3.3 National Environment Policy, 2013

The policy provides for governance framework for environment management. In regard to solid waste management, the policy recognizes inefficient production processes, low durability of goods and unsustainable consumption and production patterns lead to excessive waste generation. In order to address these challenges, the policy provides for development of an integrated national waste management strategy, promotion of use of economic incentives to manage waste and promotion of establishment of facilities and incentives for cleaner production waste recovery, recycling and re-use.

3.4 Kenya Vision 2030

The Kenya Vision 2030 lays the foundation for social and economic development in Kenya. In regard to solid waste management, Kenya Vision 2030 provides for development of solid waste management systems in at least 5 municipalities, and in the proposed economic zones, regulation on use of plastic bags, development and enforcement of mechanisms targeting pollution and solid waste management regulations, strengthening of institutional capacities of multi-sectoral planning and strengthening linkages between institutions of planning and environment management, development of national waste management system and use of market-based environment instruments for providing incentives or disincentives in solid waste management and establishment of initiative to clean the Nairobi River as well as rivers and water fronts in Kisumu, Mombasa and Nakuru.

3.5 The National Solid Waste Management Strategy, 2015

The National Solid Waste Management Strategy, 2015 is anchored on the Kenya Vision 2030. It lays the foundation for strategic management of solid waste in Kenya. The strategy provides for among others for–

- a) definitions and classification of solid waste.

- b) the national context and status on solid waste management.
- c) the common waste management practices in Kenya.
- d) the challenges facing solid waste management in Kenya.
- e) integrated solid waste management.
- f) the waste management cycle and ideal approaches applicable to Kenya.

The National Strategy sets the foundation for development and adoption of County solid waste management policies and strategies.

3.6 Global Policy Related to Solid Waste Management

The global policy related to solid waste management is mainly contained in the United Nations conventions and policies that provide for framework for solid waste management and which have implications on County solid waste management policies and laws. They include—

- a) United Nations Convention on Climate Change. Article 4 on commitments provides for promotion and cooperation in development, application and diffusion including transfer of technologies, practices and processes that control, reduce or prevent anthropogenic emissions of greenhouse gases in sector such as waste management sectors.
- b) The Kyoto Protocol to the United Nations Convention on Climate Change. Article 1 (viii) provides for States’ obligation to limitation or and reduction of methane emissions through recovery and use of waste management. The Protocol obligates States to formulate and implement solid waste management programmes that are intended to mitigate climate change.
- c) The Basel convention on the Control of Transboundary Movement of Hazardous Wastes and their Disposals. However, the control of international movement of hazardous waste is a mandate of the national government.
- d) The Rio Declaration on Environment and Development (Agenda 21-Global Programme of Action on Sustainable Development).

Chapter 7 provides for sustainable human settlements which include provision of basic services such as waste collection, Chapter 20 provides for managing hazardous wastes and Chapter 22 provides for managing solid wastes and sewage which encourages waste minimization and increase reuse and recycling.

In addition, the United Nations’ Sustainable Development Goals (SDGs) establishes a global framework and commitment for sustainable development. Specifically, key SDGs

that have direct implications on solid waste management and which shall be integrated in the County model policy shall include –

- a) Goal 3: Ensure healthy lives and promote wellbeing for all at all ages.
- b) Goal 6: Ensure availability and sustainable management of water and sanitation for all.
- c) Goal 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.
- d) Goal 11: Make cities and human settlements inclusive, safe, resilient and sustainable.
- e) Goal 12: Ensure sustainable consumption and production patterns.

3.7. Other policies and laws with implications on County solid waste management policies and laws.

There are other national policies and laws that have implications on County solid waste management (or the process and institutional frameworks for County policies and laws). These include–

- a) **County Governments Act, No. 17 of 2012**, which provides for the governance and management system and process in the County including development planning, decentralization, citizen participation and policy development among others.
- b) **Public Finance Management Act, Cap 412 C**, which provides for financial planning and management at the national and County levels including linkage of development planning, budgeting and public expenditure.
- c) **Urban Areas and Cities Act, Cap 275**, which provides for integrated development planning in urban areas. The Act provides for development of urban integrated development plans for urban areas and cities which include planning for solid waste management.
- d) **Physical Planning Act, No. 6 of 1996**, which provides for physical planning and development control in Kenya, which is mainly a County function. Integrated Solid Waste Management System requires functioning and effective spatial planning, zoning and land laws.
- e) **Legal Notice No. 137 on Transfer of Functions to County Governments, 2013**, which provides for unbundling of County functions stipulated under Part 2 of the Fourth Schedule to the Constitution.

CHAPTER FOUR

4.0 POLICY FRAMEWORK

4.1 Introduction

In order to comprehensively address solid waste management, a framework setting the policy direction to be pursued by the Municipal board, County Government and other stakeholders is essential. This chapter describes the policy framework consisting of the core policy measures to be pursued. In addition, the chapter lay out the policy vision, mission and guiding principles.

4.2. Policy rationale

The municipal board seeks to establish an effective, efficient and sustainable solid waste management in order to facilitate realization of its development goals. This solid waste management policy will be instrumental in advancing municipal social and economic development. This policy is therefore developed in order to –

- a) Provide for a policy mechanism for implementing County functions related to solid waste management as assigned under the Constitution of Kenya.
- b) Provide for adoption of Integrated Solid Waste Management system and processes in the municipality.
- c) Facilitate adoption and compliance with relevant international and national standards for solid waste management in the municipality.
- d) Facilitate the realization of Kenya Vision 2030 as it relates to solid waste management.

4.3. Policy Goal

To minimize waste generation and promote re-use, recovery and recycling of waste materials and sustainable waste disposal.

4.4. Policy mission

To promote a sustainable, effective and integrated solid waste management system.

4.5. Policy objectives

The policy shall pursue the following objectives–

- a) Formulate the appropriate legislation and economic instruments on waste management.

- b) Build capacity and inculcate responsible behavior on waste management.
- c) Mobilize resources so as to develop a sustainable waste management system.
- d) Promote and establish waste segregation and recycling systems.
- e) To establish sustainable infrastructure and systems for waste collection and transportation.
- f) To establish environmentally sound infrastructure and systems for waste disposal and treatment.
- g) Protection of public and occupational health and the environment.
- h) Promote resource recovery from waste materials.
- i) Deploying technologies appropriate to prevailing conditions.
- j) Encouraging and inviting research and development into technologies and governance approaches for sustainable resource and waste management.

4.6. Policy measures

The municipal board shall adopt an integrated approach to solid waste management as described in chapter 1 as well as the principles of solid waste management that form the foundation of this policy. The policy measures shall be based on a combination and integration of the functional elements in solid waste management, solid waste management hierarchy and the two-triangle framework both of which form the integrated solid waste management system. This part shall prescribe the policy measures that the government shall pursue. The policy measures shall be in the form of policy statements, which prescribe the appropriate policy instruments in solid waste management. In addition, the policy measures are based on the constitutional functional assignment of County governments as well as constitutional provisions.

4.6.1. Solid Waste Generation

Generation of waste depends on product demands, production processes, consumption demands, behavior and patterns among others.

Waste generation has implications on resources used for production of products, which result in varying levels of waste generation. Waste generation exists throughout the product lifecycle. Most waste generated consists of municipal waste, which emanates from consumption of processed products at household, commercial and industrial levels. Some processes or activities

such as industrial ones contribute to high waste generation. Whereas, the County government has no legal mandate to regulate production processes, which would reduce amount of waste generated, it has a duty to promote appropriate production processes, change in consumption behavior and patterns. The aim is to prevent generation of waste where possible through appropriate means.

4.6.1.1 Policy measures

In order to promote and facilitate prevention of solid waste generation through sustainable waste generation processes, the County department responsible for solid waste management shall –

- a) Promote prevention of waste generation among product users through awareness creation on behavior change, consumer choices and consumption practices to reduce excessive consumption or use and waste of diverse products.
- b) Collaborate and coordinate with national government and other stakeholders in adopting measures for promoting resource conservation and management to prevent or avoid excessive utilization of resources which lead to excess generation of solid waste.
- c) Establish partnership and collaboration with manufacturers wholesalers and retailers in adopting appropriate measures and strategies for preventing waste generation.
- d) Creation of awareness and sensitization of all relevant stakeholders on sustainable solid waste generation
- e) Engage with national government to adopt appropriate measures for preventing waste in the product value chain and life-cycle such as product and packaging design, manufacture, distribution and product use.
- f) Promote in collaboration with national government and relevant stakeholders the adoption of modern technology in product manufacture so as to reduce excessive generation of solid waste.
- g) In collaboration with other relevant public and private stakeholders, promote reuse of products or materials e.g. containers or packaging materials in order to reduce generation of waste.
- h) The department responsible for solid waste management shall establish an inventory for all the waste streams which shall be disaggregated according to the respective sources.

4.6.2. Solid waste handling and separation, storage and processing at source.

Waste handling and storage before collection and transport determines the effectiveness of the rest of solid waste management system. Waste handling and storage at point of generation requires adoption of public and environmental health standards. In order to facilitate reduction, recycling and recovery of solid waste, waste separation or segregation at source is essential. Currently, the municipality experiences poor solid waste handling, storage and separation at the sources. This is mostly common in the urban areas due to high population density and low awareness of sustainable waste handling, separation and storage processes. Other challenges faced by the municipality include storage of organic and inorganic waste in the same containers, open storage of waste or disposal of waste in outdoor open places directly from the source/point of generation or storage of waste in open spaces within premises which is a threat to public and environment health.

4.6.2.1 Policy measures

In order to ensure effective and appropriate solid waste handling, storage and separation, the following policy measures shall be adopted–

- a) The department responsible for solid waste management shall in collaboration with relevant stakeholder's carryout awareness creation and capacity development to waste generators on handling, storage and processing of solid waste at source.
- b) Solid waste shall be segregated or separated at source or point of generation into dry (recyclables) and wet waste (food waste and organic matter) and stored in appropriate receptacles in accordance with the prescribed guidelines and standards.
- c) The department responsible for solid waste management shall in collaboration and coordination with national government, generators of solid waste and relevant stakeholders develop and adopt strategies, measures and standards to promote and facilitate segregation of solid waste at source or point of generation.
- d) In accordance with the building code and development control laws and policies, owners or occupiers of residential, commercial or industrial premises shall install appropriate containers and spaces for waste handling and storage within the premises for purposes of ease of collection and which meet public and environment health standards for purposes of ease of collection.

- e) Solid waste generated from any premises or source shall be separated and stored within the premises before being collected and transported for recovery and final disposal.
- f) The waste generator shall strictly segregate glass bottles or any other glass related waste at the source.
- g) Adequate measures shall be put in place to manage any leachate from waste receptors and collection points
- h) The department responsible for solid waste management shall ensure adoption of appropriate measures and processes for waste segregation at the point of generation.
- i) Disposal of waste in open grounds or in non-designated collection points by a waste generator shall be prohibited.

4.6.3. Solid waste collection

This refers to the collection of waste from the point of generation or production (residential, industrial, commercial or institutional) to the point of treatment, recovery or disposal. Waste collection methods are determined by the location of waste generation (i.e. public places, residential, commercial, industrial or commercial). Uncollected waste leads to public and environmental health hazards such as diseases and health conditions, public nuisance, and blockage of drainage system, seepage of waste into water and soil among others.

The waste collection process is required to be efficient and carried out through appropriate means. Waste collection services in the municipality especially for urban areas are provided by the private sector. However, waste collection services for public areas are carried out through municipal services provided by the County government. Solid waste in the municipality is characterized with disposal of waste in open areas before collection (open dumping) and inefficient and inadequate waste collection services in both public and private places. Some localities in urban areas where there lack organized waste collection services experience environmental and health challenges associated with open disposal of waste.

Other challenges include inadequate waste collection points and containers or bins as appropriate and low funding of waste collection services.

4.6.3.1 Policy Measures

In order to address challenges associated with waste collection, the following policy measures shall be adopted—

- a) The department responsible for solid waste management shall in consultation with National Environment Management Authority and other relevant stakeholders designate, gazette and develop waste collection points in each ward according to the solid waste management spatial map.
- b) The department responsible for solid waste management shall in consultation with respective local residents representing residential, commercial, institutional and industrial areas, place or install appropriate waste collection containers, receptacles and bins in strategic public places for purpose of collection of solid waste.
- c) All institutions such as schools or health facilities shall place or install appropriate waste collection containers, receptacles and bins in strategic places within the facilities for purpose of collection of solid waste which shall conform to the prescribed standards.
- d) Solid waste collection services provided by public or private actors shall comply with the prescribed standards and operating procedures.
- e) Solid waste collection services from households, commercial, institutional or industrial premises shall be carried out by private sector service providers in accordance with prescribed standards and guidelines.
- f) The department responsible for solid waste management shall establish a system for collecting solid waste in informal settlements which do not have access to private sector provision of waste collection services.
- g) A solid waste generator shall deposit any waste generated to the appropriate waste collection point located within the geographical locality of the waste generator and in the appropriate waste segregation or separation collection receptacles.
- h) The collector shall ensure wide coverage to ensure no littering through improved and careful collection methods.
- i) The collector shall consider the collection of the separated waste to avoid demeaning the efforts made at segregation
- j) There shall be established a system of registration of solid waste collectors including waste pickers for the purposes on coordinating solid waste collection, facilitating stakeholder capacity development and ensuring compliance with prescribed guidelines and standards.

- k) The department responsible for solid waste management shall in consultation and collaboration with National Environment Management Authority and other relevant stakeholder designate, gazette and develop waste transfer stations according to the solid waste management spatial map and prescribed standards. The department may establish or facilitate establishment of specialized transfer stations for specific types of solid waste.
- l) The department responsible for solid waste management shall promote and facilitate establishment of intermediary community-based waste sorting centers which shall be integrated with the municipality solid waste management system.
- m) The department responsible for solid waste management shall in collaboration with the department responsible for public health maintain waste collection points in conformity with prescribed public and environment health standards.
- n) The department responsible for solid waste management shall in collaboration with the department (s) responsible for women, youth, persons with disabilities or other vulnerable groups and County treasury develop initiatives for the groups to participate in co-management of waste collection points and waste collection services for purposes of promoting economic empowerment of the groups.
- o) The municipal board shall initiate and develop public private partnership programmes for sustainable solid waste collection services.
- p) In accordance with Access to Government Procurement Opportunities Policy, the municipal board shall provide preferential treatment to youth, women and persons with disabilities in accessing thirty percent of County government contracts for solid waste collection services.
- q) In procuring services for provision of solid waste collection services, the municipal board shall consider a supplier's integration of service delivery with youth, women and persons with disabilities empowerment.

4.6.4. Solid Waste Transfer and Transportation

Waste transfer and transportation is directly related to waste collection. Waste is generally collected for the purposes of transfer or transportation to the next point of waste management system. Solid waste in the municipality is normally transported from collection points directly to the final disposal sites or landfills. This has meant that there has been limited intermediate

waste processing such as recovery, recycling and composting. The common mode of waste transportation is through trucks or hand carts for transfer of waste from households or premises to waste collection points. Most of the trucks are open which leads to waste dropping off during transportation.

4.6.4.1 Policy Measures

In order to address challenges associated with solid waste transfer, the following policy measures shall be adopted–

- a) All solid waste transporters shall be registered and licensed by the County government as prescribed.
- b) Solid waste transportation services including plant and equipment shall conform to the prescribed standards.
- c) The department responsible for solid waste management shall ensure continued creation of awareness to all waste transporters on efficient and effective waste transportation methods and measures
- d) Solid waste transporters shall ensure wide coverage to avoid littering during transportation
- e) The department responsible for solid waste management shall in collaboration with other public and private stakeholders establish market linkages between waste transporters and women, youth, persons with disabilities or other vulnerable groups involved in co-management of waste collection and for purposes of economic empowerment of the groups and effective service delivery.
- f) In accordance with Access to Government Procurement Policy, the municipal board shall provide preferential treatment to youth, women and persons with disabilities in accessing thirty percent of County government contracts for transfer and transportation of solid waste.
- g) In granting contracts for provision of solid waste transfer and transportation services, the municipal board shall consider a supplier's integration of service delivery with youth, women and persons with disabilities empowerment.
- h) Solid waste transfer and transportation services from households, commercial, institutional or industrial premises shall be carried out by private sector service providers in accordance with prescribed standards and guidelines.

- i) The department responsible for solid waste management shall establish a system for transfer and transportation solid waste in informal settlements which do not have access to private sector provision of waste collection services.
- j) The department responsible for solid waste in collaboration with the departments responsible for physical planning and transport and National Environment Management Authority and in consultation with solid waste transportation service providers, designate specific routes and time schedule to be followed in transfer and transportation of solid waste.

4.6.5. Solid Waste Separation, Processing and Transformation

Sustainable management of solid waste leads to processing and transformation of waste into economic value. As a result, very minimal waste is actually disposed in the final landfill. Waste separation entails separating waste according to potential use such as recycling or recovery. Waste is separated into for example organics and recyclables (which are further separated into for example e-waste, plastics, glass bottles, papers and junks such as wood among others). Waste processing and transformation entails material recovery processes such as composting, combustion and recycling of materials to make useful products.

The municipality lacks a structured system of separation, processing and transformation of solid waste into useful materials that may be utilized for other purposes.

Most of the waste generated, which comes from urban areas, is disposed through open dumping in dumpsites. The municipality lacks a coordinated system for separation of waste and recycling. However, there are few to initiatives for collection of recyclable materials especially metal and plastics.

4.6.5.1 Policy Measures

In order to address the problem of poor waste separation, processing and transformation, the following policy measures shall be adopted–

- a) The department responsible for solid waste management shall in collaboration with other relevant stakeholders mobilize local communities and neighbourhoods to promote and facilitate collection and separation of recyclable solid waste.
- b) The department responsible for solid waste management shall in collaboration with national government and other relevant stakeholders establish a system for facilitating and promoting solid waste separation, processing and transformation (material recovery

- and recycling which shall among others include facilitation of enterprises involved in waste processing and transformation to access solid waste placed in transfer stations, technology acquisition, technical assistance and capacity development.
- c) Final waste separation shall be undertaken at the transfer stations. Other waste processing and transformation processes may take place at a transfer station.
 - d) Creation of awareness to the relevant stakeholders on separation ,processing where necessary and transformation
 - e) The municipal board shall adopt appropriate economic incentives to promote private sector participation in solid waste separation, processing and transformation such as reduced fees, charges and levies for enterprises involved in waste processing and transformation.
 - f) The municipal board shall in collaboration and coordination with national government and relevant stakeholders promote investment in solid waste processing and transformation and establishment of wholesale and retail outlets for sale of recycled products or recovered materials.
 - g) The municipal board shall in accordance with the Public Procurement and Disposal Act undertake purchase of appropriate products produced from processed and transformed solid waste in order to promote market development in solid waste management.
 - h) The department responsible for solid waste management shall in collaboration with national government entities and relevant stakeholders develop and adopt guidelines, standards and operating procedures for separation, processing and transformation applicable to each solid waste stream in accordance with the established standards and best practices.
 - i) All waste generators shall comply with the established guidelines.
 - j) Where there is no capacity to recycle any waste stream or type of waste, the municipal board shall promote and facilitate market linkages between local and external investors for purposes of supply chain management.

The department responsible for solid waste management shall, in collaboration with relevant stakeholders, establish technology and innovation hubs for development of solid waste management technology.

4.6.6. Solid Waste Disposal

Solid waste disposal is the final stage in the process of discarding solid waste. Any material that cannot be recycled or recovered is disposed mainly in the landfills or through incineration especially for biomedical waste. A sustainable solid waste management system is where few materials of solid waste are finally disposed.

However, most of the solid waste generated in the municipality is disposed through dumping in the landfills which or open grounds in public places. This, as noted earlier poses a threat to public and environmental health. The landfills in the municipality are poorly sited especially in relation to residential areas and do not meet the appropriate standards. The municipality has no sanitary landfill hence the waste disposed in the open grounds has direct negative impact on the environment and water resources. The ultimate goal is to have zero waste to landfills.

4.6.6.1 Policy Measures

In order to address challenges associated to waste disposal, the following policy measures shall be adopted–

- a) The department responsible for solid waste management shall in collaboration with the department responsible for physical planning, National Environment Management Authority, residents in the potential areas for siting landfills and other relevant stakeholders designate, gazette and develop controlled sanitary landfills in accordance with the solid waste spatial plan and the County spatial plan.
- b) All the open public places where solid waste is dumped shall be cleared and placed under the respective intended public use.
- c) The department responsible for solid waste management shall ensure and facilitate solid waste treatment before final disposal.
- d) The department responsible for solid waste management shall ensure continued creation of awareness on proper solid waste disposal methods and measures.
- e) The department responsible for solid waste management shall develop a system and standard operating procedures for management of sanitary landfills.
- f) For purposes of disposing biomedical waste, the department responsible for health in collaboration with the department responsible for solid waste management and relevant agencies shall install appropriate incinerators in health facilities.

- g) The municipal board shall implement and where applicable, enforce national law and policy that prohibits disposal of solid waste into rivers and water resources.
- h) Where the national government has established a landfill, the municipal board shall utilize the landfill for purposes of disposing the solid waste designated for disposal in the landfill.

4.6.7. Solid Waste Management Financing

Provision of sustainable solid waste management services requires substantial funding. It requires coordinated financial investment from public, private and voluntary sectors. Some of the solid waste management processes such as processing, transformation, treatment and disposal are capital intensive. Consequently, for the municipality to achieve intended objectives for solid waste management, there is need for adoption of diverse funding models and instruments. Currently, there is low funding for solid waste management in the County. There is low private sector investment in solid waste management. In addition, public funding in the sector is below the levels required for financing the municipal solid waste management services.

4.6.7.1 Policy Measures

In order to address the policy challenges in financing solid waste management, the following policy measures shall be adopted–

- a) There shall be levied appropriate user fees and charges for solid waste management. The fees and charges shall be levied in accordance with the tariff policy stipulated under the County Governments Act.
- b) The municipal board shall provide incentives for promoting solid waste recycling and waste material recovery which may include reduced fees, levies and charges for enterprises engaged in the two processes.
- c) The municipal board shall in consultation with national government adopt public-private partnership model of financing various processes in solid waste management. Such partnership shall be based on efficiency, cost effectiveness and sustainability of the model in provision of solid waste management services.
- d) The municipal board shall facilitate its officers to acquire technical skills and develop competencies for public private partnerships management especially in initiation,

development, negotiation, award and management of public private partnerships in solid waste management.

- e) The municipal board shall subsidize solid waste management services to low income areas and informal settlements in accordance with the County Governments Act.
- f) The municipal board shall progressively increase budgetary allocations for implementation of this policy and laws related to solid waste management.
- g) The municipal board shall mobilize resources in the form of grants and donations from development partners for financing solid waste management processes.

4.6.8. Solid Waste Management and Informal sector

Informal sector is a key player in solid waste management. Most informal actors in solid waste management include waste pickers, community-based organizations, self-help groups, small and micro enterprises and individual actors such as waste pickers and sorters among others. They play a significant role in the whole solid waste management value chain. However, their work exposes them to numerous health conditions and diseases especially respiratory ones. In addition, whereas they generate some income from their activities, the incomes are very low. Due to limited access to capital, most of their work is undertaken manually. The municipal board recognizes the valuable role the informal sector plays in solid waste management and the strategic need to facilitate their role so as to promote employment creation.

4.6.8.1 Policy Measures

In order to promote participation of informal sector in solid waste management, the following policy measures shall be adopted in addition to measures described above –

- a) The municipal board shall facilitate the informal groups or individuals involved in solid waste management value chain to access affordable capital for solid waste management enterprise development.
- b) The department responsible for solid waste management shall initiate capacity development programs, trainings, innovation workshops and bench marking for solid waste management workers, informal sector engaged in solid waste management as well as facilitate and support the sector to adopt health requirements.
- c) The department responsible for solid waste management shall in collaboration with other relevant stakeholders, facilitate and promote value addition and market linkage between the informal sector and investors in solid waste management value chain.

- d) The municipal board shall where appropriate develop service agency agreements with the informal sector in the provision of solid waste management services.

4.6.9. Solid Waste Management and land use planning

The quantities of various waste streams generated depends on the population density of waste generators in a given locality. Different zones produce different types of waste and in various quantities. The location of waste collection points, application of waste collection, transfer and transportation services are based on spatial planning in a given locality. Further, the siting of waste disposal areas is based on physical characteristics of the locality such as soil structure, terrain, population density and impact of the locality to other physical resources such as water resources. Consequently, land use planning has a significant role to play in ensuring sustainable solid waste management. The municipal board has no solid waste management spatial plan to, which guides various interventions in solid waste management services.

4.6.9.1 Policy Measures

In order to ensure that there is sustainable solid waste management, it will be essential to have appropriate and effective zoning for solid waste management. In this regard–

1. The department responsible for spatial planning in collaboration with the department responsible for solid waste management and other relevant stakeholders, shall–
 - a) carry out solid waste management survey using Geographical Information System (GIS), which shall consider –
 - i. land use: topography, drainage and soil
 - ii. Infrastructure (transport, communications, health, education, water and energy)
 - iii. Economic base of the area (urban informal economic base)
 - iv. Human settlements (density and land use)
 - v. Institutions such as schools and other government institutions, industries and commercial enterprises and non –state organizations
 - b) Develop the municipality solid waste management spatial plan which shall include details for each ward as the core decentralized spatial units.
 - c) Designate the location of the collection points, transfer stations, composting sites, waste recovery facility and landfills in accordance with the solid waste management spatial plan.
 - d) Regulate solid waste management in accordance with the solid waste management spatial plan.

2. The department responsible for solid waste management shall in collaboration with departments responsible for spatial planning and County administration map the municipality into solid waste management zones for purposes of ensuring efficiency in service delivery and coordination of stakeholder participation in solid waste management.

3) The municipal board shall ensure that the municipal spatial plan designates zoning and setting up of industries that are integrated in terms of use of waste generated in some industries which is utilized as raw materials in other industries.

4.6.10. Planning, Partnerships, Participation and Inter-governmental Relations

Solid waste management is complex due to multiplicity of social, economic and environmental determinant factors and stakeholders. There is no single policy measure or stakeholder that can manage solid waste effectively. There is need for inclusivity of diverse stakeholders in solid waste management processes. Users and providers of solid waste management services must partner and collaborate in order to deal with all aspects of solid waste management. All the stakeholders should be involved in identifying policy options and implementing programmes related to solid waste management. The municipality has a weak stakeholder management process in regard to solid waste management. Users and non-state providers of solid waste management services are usually excluded from active participation in the management process.

4.6.10.1 Policy Measures

In order to ensure inclusion and participation of users and providers of solid waste management services, the following policy measures shall be adopted–

- a) The department responsible for solid waste management shall in collaboration with relevant stakeholders prepare a municipal solid waste management plan which shall provide a framework for implementing this policy, national policy and any law enacted for purposes of implementing this policy.
- b) The department responsible for solid waste management shall in collaboration with relevant stakeholders –
 - i) initiate programmes for mobilizing and creating awareness among residents, local communities and neighborhoods to participate in sustainable solid waste management.
 - ii) establish mechanisms to receive and handle complaints related to solid waste management service delivery from the respective localities.

- iii) facilitate community or area-based forums for users and providers of solid waste management services to deliberate on emerging issues in solid waste management to as to enhance efficiency in service delivery.
 - iv) promote and facilitate stakeholder-led initiatives on solid waste management.
- c) The department responsible for solid waste management shall consult, inform and coordinate with relevant stakeholders on any matters related to service delivery on solid waste management.
- d) The municipal board shall liaise, consult, collaborate and coordinate with the national government and neighboring counties on matters related to solid waste management.

4.6.11. Information, Education and Communication

Solid waste management depends on a combination of regulatory, service delivery and information-based tools. Whereas regulatory tools are instrumental command and control instruments in behavior in matters such as generation, handling and disposal of solid waste, they cannot be fully effective unless they are complemented by behavior change by users and providers of solid waste management services. Sustainable solid waste management depends on value- based approach by individuals and entities. Strategic communication and messaging on solid waste management is instrumental in shaping public opinion and support. The municipality lacks effective information, education and communication system and processes. There is low awareness on sustainable solid waste management in the municipality.

4.6.11.1 Policy Measures

In order to increase awareness and change behavior on solid waste management, the following policy measures shall be adopted–

- a) The department responsible for solid waste management shall in collaboration with relevant stakeholders develop and implement information, education and communication system and strategies targeting diverse users and providers of solid waste management services and shall ensure that such information is available to all stakeholders and municipal residents.
- b) The department responsible for education and department responsible for solid waste management shall in collaboration with national government ministry responsible for education and relevant stakeholders develop information, education and communication

- materials and initiate dissemination, education and awareness creation programmes targeting children and youth on solid waste management.
- c) The department responsible for solid waste management shall in collaboration with the department responsible for information technology develop technology-based communication strategies on solid waste management.
 - d) The department responsible for solid waste management shall in collaboration with the department responsible for information technology and relevant stakeholders establish a solid waste information management system.

4 .6.12. Research and development

Solid waste generation is dynamic and changes as society develops. The form of waste streams changes as production processes change and new products and packaging emerge. Consequently, there is need for continuous innovation in intervention measures and strategies in solid waste management. In addition, there is need for evidence-based decision making on solid waste management. There are minimal research efforts undertaken by the municipal administration in regard to solid waste management.

4.6.12.1 Policy Measures

In order to address the policy gaps in research and development, the following policy measures shall be adopted–

- a) The department responsible for solid waste management shall facilitate a capacity development programme for personnel in research and development.
- b) The department responsible for solid waste management shall establish a research unit to coordinate, promote and undertake research and development related to environment management and governance.
- c) The department for solid waste management shall undertake and collaborate with other relevant research institutions and institutes of higher learning in carrying out research and development in solid waste management.
- d) The department responsible for solid waste management shall in collaboration with relevant stakeholders disseminate research findings.
- e) The department responsible for solid waste management shall establish a research data management system.

- f) The County executive committee shall ensure that evidence generated through research informs decisions related to sustainable solid management.

CHAPTER FIVE

5.0 MONITORING, EVALUATION, ACCOUNTABILITY AND CONTINUED LEARNING

Poor solid waste management has direct and indirect effects to the public health and the environment therefore monitoring and evaluation is an integral component in solid waste management. The MEAL system adopted for this policy will be designed to provide feedback to stakeholders to ensure accountability, transparency, facilitate appropriate decisions on future implementation and review of the policy to ensure that the input delivery, work schedules and target outputs are progressing according to the plan.

This policy shall be evaluated in accordance with overall municipal monitoring and evaluation framework, standards and system. The following requirements shall apply in regard to policy monitoring and evaluation–

- a) The department responsible for solid waste management shall designate staff to be responsible for coordinating monitoring and evaluation of implementation of this policy.
- b) In each period of 6 months, the department responsible for solid waste management shall prepare a report on the progress made in implementing the policy, which shall be submitted to municipal board for consideration and decision-making.
- c) There shall be a policy review in 3 years or as need arises which shall involve all solid waste management stakeholders. The review shall provide feedback on successes, progress and challenges related to policy implementation and whether policy outcome have been met in each year. The policy review report shall be submitted to municipal board for consideration and decision-making.
- d) The policy shall be evaluated at the end of each period of 5 years to assess the extent to which policy outcomes have been realized including policy impact.
- e) The department responsible for solid waste management shall disseminate policy evaluation.

This policy stresses effective MEAL to ensure sustainable, transparency, accountability and professionalism at all levels.

The information will then be linked to the population trends, economic growth and other social monitoring parameters and thereby provide basis for policy reviewing and planning of future

waste management needs. The information will also inform on the effectiveness and relevance of the policy.

CHAPTER SIX

6.0 POLICY IMPLEMENTATION

The chapter outlines the implementation framework to be followed in implementing Municipal Integrated Development Plan, these includes, Institutions responsible for the actualization of the plan, resource requirement and mobilization

6.1 Planning and Performance Management

Implementation of the policy shall be undertaken through development of environment sectoral plan (or sectoral plan dealing with solid waste management). In accordance with the County Governments Act, the environment sectoral plan shall be part of the County Integrated Development Plan (C.I.D.P 2018-2022) and Municipal Integrated Development plan (IDeP 2018-2022). The County Medium Term Expenditure Framework (MTEF) and the County Fiscal Strategy Paper shall adequately cover the strategies and programmes provided under the environment sectoral plan. The sectoral plan shall be implemented annually through the annual development plan.

Implementation of this policy shall be integrated with the municipal performance management system through the sectoral plan. The annual performance contracting and targets for respective departments responsible for implementation of this policy shall be aligned to activities and programmes in the environment sectoral plan so as to ensure complementarily and intersectoral approach in implementing this policy. Data related to policy implementation shall be collected on a continuous basis in order to inform decision making by the municipal board and other sector stakeholders.

6.2 Legal and Administrative Reforms

In addition to programmes and projects to be designed under the environment sectoral plan (or sectoral plan dealing with solid waste management), appropriate legal reforms related to solid waste management shall be undertaken.

There shall be prepared for enactment or adoption laws, guidelines, standards and frameworks. Key among them shall be enactment of Municipal Solid Waste Management Bill.

6.3 Collaboration with National Government

As stipulated under Article 6 and 189 of the Constitution, the County government shall institute measures to cooperate, collaborate, consult and partner with the national government in implementing this policy as well as implementing national policies, laws and standards related to solid waste management. In this regard, the department responsible for solid waste management shall initiate intergovernmental collaboration mechanisms with the national government ministry of environment and other agencies responsible for matters related to environment.

6.4. Staff Capacity Development

The department responsible for solid waste management shall in collaboration with the department responsible for human resource management and the County Public Service Board resource the department as well as other County departments responsible for implementing this policy, with highly qualified professional staff in line with respective policy measures. In addition, the department responsible for solid waste management and department responsible for human resource management shall develop and facilitate continuous professional and capacity development for all relevant officers in various departments responsible for implementing this policy.

ANNEXTURE: IMPLEMENTATION MATRIX.

Policy Objective	Policy Strategy	Activities	Actors	Timeline	Approx. Budget	Status
1. Formulate appropriate legislation and instruments	-Develop and implement legislation and economic instruments	-Legislation and instruments development and harmonization -ensure implementation of regulations and instruments set	-County executive -Nyeri municipal Board -County assembly	2 years	5,000,000 5,000,000	
	-Ensure enforcement of waste management legislation and standards	-compliance and enforcement of waste management standards and legislations	-County executive -Nyeri municipal Board -NEMA County assembly	Continuous (Rigorous first 2 years)	10,000,000	
	-Uptake of appropriate technologies	-Benchmarking on and best practices of appropriate technologies	County Executive -Nyeri municipal Board NEMA	Continuous	2,000,000	
2. Capacity Building.	-Recruitment of skilled and unskilled personnel	Advertisement of vacancies	County Executive -Nyeri municipal Board	2 years	50,000,000	

			County public service board			
	-Conduct in service training of personnel on waste management	Workshop Short courses	County executive -Nyeri municipal Board	2 years	1,000,000	
	Sensitize the public on integrated waste management	Hold civic education through media and Barraza's Publish educational materials Monthly clean ups	County executive -Nyeri municipal Board Community groups Private companies	Continuous	5,000,000	
3.Mobilize resources	Lobby for Increased budgetary allocation.	Procurement plan preparation	County executive -Nyeri municipal Board County assembly	1 year	500,000	
	Promote public private partnerships in waste management	Marketing and advertisement -Nyeri municipal Board Organizing stakeholders' forums	Private companies and corporations -Nyeri municipal Board Community groups	3 year	500,000	

	Promote and activate waste as a revenue stream	Civic education, campaigns and trainings Marketing of recycled and reusable	County executive Community groups Private companies	1 year	500,000	
4. Promote and establish waste segregation and recycling systems.	Provision of equipment and transport system	-Procure bins and waste bags labeled and/or colour coded according to the type of waste -Plan and organize collection	County Executive -Nyeri municipal Board NGOs Private companies	3 years 1 year	10,000,000	
	-Develop waste segregation and recycling plans	-conduct benchmarking for practices on segregation and recycling -conduct training of both staff and other stakeholders -conduct an estate pilot	County executive -Nyeri municipal Board NGOs	2 years Continuous	10,000,000 1,000,000 3,000,000	
	Develop promotion programs on use of recycled and recovered materials	conduct civic education -publish educational material		Continuous	1,000,000	

	-Enhance stakeholders collaboration on waste segregation and recycling	-campaigns and advertisement -stakeholder workshops	-Nyeri municipal Board		500,000 500,000	
5. Establish sustainable infrastructure and systems for waste collection and transportation	-Designate, build and operate collection points, transfer stations and disposal sites	Identification of strategic areas Construction and management of transfer stations	-County Executive -Nyeri municipal Board -NEMA	3 years	15,000,000	
	Provision of adequate and appropriate waste collection and transportation systems	Buy additional and relevant waste trucks to meet the needs Maintenance of roads to enable easy access use of GIS to map and truck waste transportation	County executive -Nyeri municipal Board	3 year	10,000,000	
	Improvement and maintenance of existing facilities and machinery	Upgrade existing waste management facilities Repair of grounded vehicles and machinery	County executive -Nyeri municipal Board NEMA	continuous	-	
6. Establish environmentally sound infrastructure and systems for waste disposal and treatment	-Acquiring land for waste management purposes.	Survey and Acquisition of a suitable land according to set regulation. -Acquiring title deeds for the disposal sites	County Executive -Nyeri municipal Board NEMA	3year	20,000,000	

		and transfer stations	NLC			
	-Conduct public participation and sensitization on waste disposal as a land use activity	-Call for public participation before acquiring sites -Hold civic education forums -Hold baraza meetings with the communities	County Executive -Nyeri municipal Board County Environment Committee NEMA County Assembly NLC	1 year	1,500,000	
	-Conduct environmental Assessments and audits on the disposal and transfer sites	To procure services of a lead expert licensed by NEMA for a) EIA on proposed disposal site b) Audit on existing sites c) EIA on proposed transfer stations	NEMA, County Executive -Nyeri municipal Board	1 year	1,500,000	
	Establishment of waste treatment and disposal facilities	-Develop a sanitary landfill -Put up an incinerator -Put up pyrolysis machinery	County executive -Nyeri municipal Board Public private partnerships	4 years	500,000,000	

		-Set up recycling plant	Private investors NEMA			
	-Increase security and surveillance in waste disposal sites	-Monitoring of activities at sites by enforcement and security officers -Fencing of the existing and proposed sites -	-County Executive Board -Nyeri municipal Board -NEMA -Ministry of interior and coordination -County Legal Unit	1 year	10,000,000	