

MUNICIPALITY OF EMBU



Integrated Solid Waste Management Plan

2023-2028

JANUARY 2023

**Municipality of Embu
Integrated Solid Waste
Management Plan
2023 – 2028**

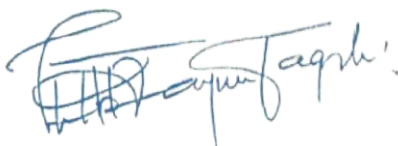
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FOREWORD

Provision of healthy environment for all citizens is a constitutional requirement and is a critical factor in development of the municipality. The global focus is that the future is urban. This implies that there is expected pressure in the urban centres. This leads to population challenges, settlement challenges, and need to improve on waste management as more waste will be generated. Pursuant to this, improving health status of all citizens is a main priority of the Municipality of Embu. In this regard, the Municipality Waste Management Plan (WMP) is a great achievement in the endeavours to ensure a clean and safe environment for all. Proper waste management will minimize waste nuisance, create order and even improve the ambience of the urban area. This plan is further in line with the government's need to contribute to the Kenya country targets toward the global Sustainable Development Goals (SDGs), especially Goal 11.6 on inclusive, safe, resilient and sustainable cities.

This WMP integrates the efforts of different partners in provision of clean environment. This results to synergy through concerted efforts of the government, private sector, non-governmental organizations, multilateral and bilateral development partners, and above all the general public within the Municipality.

The Municipality is setting pace in line with the national sustainable waste management policy that envisages tapping into the benefits of circular economy and zero waste models for sustainable urban development, following eight strategies; waste reduction at source, waste collection, waste recycling and resource recovery, waste disposal infrastructure and technology options, private sector engagement and circular economy model policy, incentives and legislation - framework for ISWM, public outreach and communication and institutional arrangements and capacity.



Raymond N. Kinyua

CECM for Urban Development Embu County

PREFACE

Solid Waste Management Plan maps out the course to take in handling of waste in the Municipality. It addresses issues of waste minimization at the production level, the movement or transportation of waste from the collection centers to the landfill or a recycling plant through safe, efficient and economical method, reduction of general waste output, identification of reusable and recyclable materials.

This plan also expresses reduction of pollution effect and protection of ground water sources in order for sustainability. In order to have a holistic approach to waste management, this plan integrates different needs and problems to give a well thought multivariate handling of waste.

In addition, the plan collates information that plays a pivotal role key decision-making on collection mechanisms to be adopted, resource allocation and optimization, planning and optimization of collection frequency as well as the governing rules. The plan articulates inclusion of research and technology advancement that would offer better and more efficient waste -to- energy conversion, improve recycling processes and create valuable products in order to minimize dependence on depletable resources.



Catherine Nyaga

Municipal Manager & Municipal Board Secretary

ACKNOWLEDGEMENT

Special acknowledgment to the Municipality of Embu team for their unreserved commitment in delivery of this Plan. The good work you have done will guide the Municipality to scale the envisaged unmatched hygiene levels.

Special gratitude to the following:

1. The H.E Hon. Cecily M. Mbarire for providing requisite leadership.
2. The County Executive Committee Member for Urban Development Mr. Raymond Kinyua for unreserved support to the Municipality.
3. The Chief Officer for Urban development; Mr. Benjamin Mutisya Muasa for providing technical & financial Support.
4. Special regards and appreciation to the great team comprising of: -
 - (i) Catherine Nyaga -Municipal Manager &Board Secretary
 - (ii) Jacob Kariuki Gititi- Director Urban Development
 - (iii)John Njeru Mucira -Deputy Director Administration - Municipality of Embu
 - (iv)Dennis Munene -Finance Officer Municipality of Embu
 - (v) Nicholas Mogaka Barare – Legal Officer -Embu County

for provision of technical expertise as the think-tank in the development of this waste management plan.

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1.0 Chapter One

Introduction

CHAPTER ONE

INTRODUCTION

1.1 Background

The Municipality of Embu is located approximately 130 kilometres Northeast of Nairobi towards Mount Kenya on the West side of Embu County. It is 160 km from Nairobi and 95km from Meru town. It is served by two major roads: The B6 Nairobi-Embu-Meru Road, and the B7 Embu-Kiritiri-Garissa Road. It is Located on the coordinates 0°32'S, and 37°37'E, and lies on the south eastern slope of Mount Kenya, with an elevation of 1,350 metres (4,429ft).

According to 2019 Census, Embu town has a population of 64,979 people. The economy of the town is similar to that of other urban areas in central Kenya, with the agricultural economy of the hinterland strongly linked to the town's economy. Other sectors include commerce, financial services, and the informal economy. The presence of several institutions of higher learning has led to a significant boost of the town's real estate market, with an increased demand for housing and office space.

Urbanization has been cited as a vehicle for delivery of services to residents. This has led to increased population and vibrant economic activities, which are core generators of waste. Uncollected solid waste in, urban areas may end up in drains leading to blockage of the drainage system causing unsanitary conditions that have direct cost on residents. Thus, planning and management of waste in urban areas is a global call. Urban households and businesses produce great amount of solid waste that must be collected regularly recycled and disposed properly to ensure healthy living conditions. Many urban areas are facing solid waste management challenges due to rapid urbanization, lack of technical and financial capacity or low policy priority. Waste management planning also will ensure sensitivity in responding to the effects of waste on environment.

1.2 Municipality Profile

Municipality of Embu was established in 2019 pursuant to the Constitution of Kenya 2010, article 184 that mandated establishment of urban areas as enshrined in Urban Areas and Cities Act 2011, amended 2012, 2019. The Municipality of Embu was among the first 59 municipalities to be established in Kenya.

1.3 Goals, Objectives, Strategies and Actions of the plan

Goal	Objective	Strategies	Actions
Collection and Storage	To minimize the production of waste	<ul style="list-style-type: none"> i. Develop a zoning plan to ensure effectiveness and efficiency in the Operational areas. ii. Develop guidelines requiring all legal entities or individuals collecting waste within the Municipality. 	<ul style="list-style-type: none"> i. Mapping and zoning of waste operational areas and routes ii. Waste disposal tracking documents iii. Adoption and enforcement of NEMA air quality regulations. iv. Enforcing guidelines on garbage tracking
Transport system	To move waste from the collection centres to the landfill or a recycling plant through safe, efficient and economical method	<ul style="list-style-type: none"> i. Ensure that waste service providers transport their waste to materials recovery facility and to a landfill. ii. Ensure waste transportation trucks adhere to air quality regulations. iii. Provide tracking documents at source and destination. 	<ul style="list-style-type: none"> i. Licensing service providers ii. Legislating required regulations iii. Acquiring the recommended waste trucks iv. Provide tracking documents
Segregation at Source	To sort waste in order to reduce general waste output, identify reusable and	<ul style="list-style-type: none"> i. Ensure waste segregation is done at the source ii. Separate waste segregation 	<ul style="list-style-type: none"> i. Enforcement of waste segregation regulations at source. ii. Provision of waste segregation containers to

	recyclable materials.	containers are provided to enable sorting at source of organic waste, recyclable and non-recyclables and educate the waste generators on the prescribed sorting categories and methods.	enable sorting at source of organic waste, recyclable and non-recyclables. iii. Educate the waste generators on the prescribed sorting categories and methods. iv. Carrying out public awareness on waste colour codes and importance of proper sorting in all public labelled bins for easier sorting.
Disposal and Treatment	To reduce pollution effect and protect ground water sources in order to ensure sustainability	i. Prioritize waste control and minimization in conformance to the waste hierarchy ii. Set aside sufficient land for waste management activities, and generate jobs and livelihoods from waste management activities iii. Establish and improve waste management	i. Sensitize the public on the 4Rs (Reduce, Re-use, Recycle, Recover) ii. Liaise with the County Government of Embu to acquire and/or set aside sufficient land for waste management activities, and generate jobs and livelihoods from waste collection, recycling, and waste management activities according to the waste hierarchy. iii. Design, construct and equip a recycling

		<p>infrastructure to promote source segregation, collection, reuse, set up materials recovery facilities and controlled disposal in engineered landfills.</p> <p>iv. Identify and prioritize potential and financial requirements for setting up composting plants and technology in the Municipality.</p>	<p>material recovery plant and waste transfer stations</p> <p>iv. Provide incentives to promote reduction in waste production and recycling of the produced waste</p> <p>v. Develop a plan to transit from the current open dumpsites and adopt land filling for residual waste.</p> <p>vi. Ensure the recyclers, bio-waste processors and material recovery facilities obtain environmental compliance licenses from the statutory authorities.</p>
Community Involvement	To ensure that different needs and problems are integrated in waste management plan	<p>i. Sensitize the community, leaders and staff on sustainable SWM service provision.</p> <p>ii. Gazette collection points</p>	<p>i. Undertaking community awareness and sensitization programmes for sustainable WM service provision.</p> <p>ii. Training and sensitization of leaders and staff on WM.</p> <p>iii. Institute clean up days.</p>
Database on Waste Management	To collate information that plays a pivotal role in making key decisions about collection	i. Set up a data management system of the Municipality waste streams, volumes	i. Register service providers to ensure that all policy and regulatory decisions at the Municipality level are informed and are based on credible data.

	mechanisms to adopt, resource allocation and optimization, planning and optimizing collection frequency and rules.	generated and how they are handled. ii. Register service providers	ii. Incorporate waste management indicators into the Municipality's Integrated Monitoring and Evaluation System
Research and Technology	To invest in research and technology advancement that leads to more efficient waste -to-energy conversion, improved recycling processes and creation of valuable products in order to reduce dependence on finite resources	i. Establish and promote linkages between the Municipality and research institutions. ii. Deliberate financing for research activities	i. Establish linkages with the county government, academia, private sector, civil society and global sustainable waste management innovation institutions.

CHAPTER TWO

OVERVIEW OF SWM POLICY

2.1 Overview of Solid Waste Management Policy

The vision of the Municipality of Embu is to be the leading Municipality in integrated waste management system. The mission is to promote a healthy, safe, secure and sustainable environment for all through incorporation of modern technology on integrated waste management. The Municipality has a development culture premised on core values; Accountability, Transparency, Professionalism, Integrity, Public Participation, Teamwork, Innovation and Creativity and Equity & Fairness.

The waste management policy seeks to reduce environmental and health hazards that arise from indiscriminate dumping of waste and pollution of natural resources like land, sea and air, build capacity and inculcate responsible behavior to the society on waste management, mobilize resources for development of a sustainable waste management system and promote waste segregation and recycling systems. It also seeks to encourage and invite research and development in technology advancement and governance, deploy the technology appropriate to prevailing conditions, establish sustainable infrastructure for waste collection and transportation, establish environmentally sound infrastructure and systems for waste disposal and retreatment, protect the public and occupational health and environment and formulate appropriate legislation and instruments on waste management.

The targets of the waste management policy include collection and storage of waste, management of the transport system, ensuring segregation at source, managing disposal and treatment, integration through community involvement, establishment of database on waste management and entrenchment of research and technology.

Projects	Quantity	Unit	Years																			
			Phase I					Phase II					Phase III					Phase IV				
			2015-16 to 2020-21					2021-22 to 2025-26					2026-27 to 2030-31					2032-33 to 2035				
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18		
Distribute community dustbins/ skips (20x20m)	226	No.																				
Litter bins (small size)	150																					
Recruitment of more staff for waste collection	20	No.																				
Purchase of compactor	2	No.																				
Purchase of cess pool emptier (covered)	2	No.																				
Purchase of covered truck	2	No.																				
Acquisition and development of a new landfill site	13	Ha																				
Composting of biodegradable waste	1	No.																				
Recycling of waste	1	No.																				
Explore the possibility of PPP in SWM	1	No.																				
Awareness programme for segregation of waste at source and for solid waste management system in general	1	No.																				

2.2 Implementation matrix

Table 1: Waste Management Implementation Matrix

Goal	Actions	Action Plan		
		Short-Term 2023-2024	Mid-Term 2025-2026	Long-Term 2027-2028
Collection and Storage	i. Mapping and zoning of waste operational areas and routes			
	ii. Waste disposal tracking documents			
	iii. Adoption and enforcement of NEMA air quality regulations.			
	iv. Enforcing guidelines on garbage tracking			
Transport system	i. Licensing service providers			
	ii. Legislating required regulations			
	iii. Acquiring the recommended waste trucks			
	iv. Provide tracking documents			
Segregation at Source	i. Enforcement of waste segregation regulations at source.			
	ii. Provision of waste segregation containers to enable sorting at source of organic waste, recyclable and non-recyclables.			
	iii. Educate the waste generators on the prescribed sorting categories and methods.			
	iv. Carrying out public awareness on waste colour codes and importance of proper sorting in all public labelled bins for easier sorting.			
Disposal and Treatment	i. Sensitize the public on the 4Rs (Reduce, Re-use, Recycle, Recover)			
	ii. Liaise with the County Government of Embu to acquire and/or set aside sufficient land for waste management activities, and generate jobs and livelihoods from waste collection, recycling, and waste management activities according to the waste hierarchy.			
	iii. Design, construct and equip a recycling material recovery plant and waste transfer stations			
	iv. Provide incentives to promote reduction in waste production and recycling of the produced waste			
	v. Develop a plan to transit from the current open dumpsites and adopt land filling for residual waste.			

	vi. Ensure the recyclers, bio-waste processors and material recovery facilities obtain environmental compliance licenses from the statutory authorities.			
Community Involvement	i. Undertaking community awareness and sensitization programmes for sustainable WM service provision.			
	ii. Training and sensitization of leaders and staff on WM.			
	iii. Institute clean up days.			
Database on Waste Management	i. Register service providers to ensure that all policy and regulatory decisions at the Municipality level are informed and are based on credible data.			
	ii. Incorporate waste management indicators into the Municipality's Integrated Monitoring and Evaluation System			
Research and Technology	i. Establish linkages with the county government, academia, private sector, civil society and global sustainable waste management innovation institutions.			

2.3 Monitoring and evaluation

Table 12: Roadmap

Goal	Actions	Action Plan					
		Short-Term 2023-2024	Mid-Term 2025-2026	Long-Term 2027-2028	Responsibility	Budget	Source of Funding
Collection and Storage	i. Mapping and zoning of waste operational areas and routes				Municipal Management		ECG & Development Partners
	ii. Waste disposal tracking documents				Municipal Management		ECG & Development Partners
	iii. Adoption and enforcement of NEMA air quality regulations.				Municipal Management		ECG & Development Partners
	iv. Enforcing guidelines on garbage tracking				Municipal Management		ECG & Development Partners
Transport system	i. Licensing service providers				Municipal Management		ECG & Development Partners
	ii. Legislating required regulations				Municipal Management		ECG & Development Partners
	iii. Acquiring the recommended waste trucks				Municipal Management		ECG & Development Partners
	iv. Provide tracking documents				Municipal Management		ECG & Development Partners
Segregation at Source	i. Enforcement of waste segregation regulations at source.				Municipal Management		ECG & Development Partners
	ii. Provision of waste segregation containers to enable sorting at source of organic waste, recyclable and non-recyclables.				Municipal Management		ECG & Development Partners
	iii. Educate the waste generators on the prescribed sorting categories and methods.				Municipal Management		ECG & Development Partners
	iv. Carrying out public awareness on waste colour codes and importance of proper sorting in all public labelled bins for easier sorting.				Municipal Management		ECG & Development Partners
Disposal and Treatment	i. Sensitize the public on the 4Rs (Reduce, Re-use, Recycle, Recover)				Municipal Management		ECG & Development Partners

	ii. Liaise with the County Government of Embu to acquire and/or set aside sufficient land for waste management activities, and generate jobs and livelihoods from waste collection, recycling, and waste management activities according to the waste hierarchy.				Municipal Management		ECG & Development Partners
	iii. Design, construct and equip a recycling material recovery plant and waste transfer stations				Municipal Management		ECG & Development Partners
	iv. Provide incentives to promote reduction in waste production and recycling of the produced waste				Municipal Management		ECG & Development Partners
	v. Develop a plan to transit from the current open dumpsites and adopt land filling for residual waste.				Municipal Management		ECG & Development Partners
	vi. Ensure the recyclers, bio-waste processors and material recovery facilities obtain environmental compliance licenses from the statutory authorities.				Municipal Management		ECG & Development Partners
Community Involvement	i. Undertaking community awareness and sensitization programmes for sustainable WM service provision.				Municipal Management		ECG & Development Partners
	ii. Training and sensitization of leaders and staff on WM.				Municipal Management		ECG & Development Partners
	iii. Institute clean up days.				Municipal Management		ECG & Development Partners
Database on Waste Management	i. Register service providers to ensure that all policy and regulatory decisions at the Municipality level are informed and are based on credible data.				Municipal Management		ECG & Development Partners
	ii. Incorporate waste management indicators into the Municipality's Integrated Monitoring and Evaluation System				Municipal Management		ECG & Development Partners

Research and Technology	i. Establish linkages with the county government, academia, private sector, civil society and global sustainable waste management innovation institutions.				Municipal Management		ECG & Development Partners
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Figure 1: A map of Embu County Indicating the Administrative Boundaries

