COUNTY GOVERNMENT OF KIAMBU

THIKA MUNICIPALITY

SOLID WASTE MANAGEMENT PLAN

MUNICIPAL MANAGER
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January, 2025

Executive Summary

Thika Municipality is experiencing rapid urban growth, resulting in increased solid waste generation that presents both environmental and public health challenges. In response, the municipality has developed this comprehensive Solid Waste Management (SWM) Plan to provide a strategic, sustainable, and inclusive framework for the collection, treatment, recycling, and disposal of waste across the municipality. The plan aligns with national policies, including EMCA Cap. 387 and the Sustainable Waste Management Act 2022, while addressing local needs and operational realities.

The plan outlines key strategies to strengthen institutional capacity, promote public-private-people partnerships, and foster community engagement. Public education campaigns, stakeholder consultations, and feedback mechanisms are integrated to ensure citizen participation and social inclusion, with special attention to vulnerable groups and gender integration. Financial sustainability is emphasized through diversified revenue sources, cost recovery measures, and phased investments in infrastructure, equipment, and human resources over short-, medium-, and long-term horizons.

Operationally, the plan is structured into three implementation phases. Phase 1 (0–3 years) focuses on enhancing waste collection systems, public awareness campaigns, and initial infrastructure upgrades. Phase 2 (3–5 years) expands waste treatment and disposal capacity, including composting facilities and recycling plants. Phase 3 (5+ years) achieves full-scale recycling programs, waste diversion strategies, and integration of advanced waste treatment technologies. A robust Monitoring and Evaluation framework, including key performance indicators and feedback mechanisms, ensures continuous improvement, while periodic reviews guarantee that the plan adapts to population growth, technological innovations, and evolving community needs.

This SWM Plan represents a commitment by Thika Municipality to sustainable urban management, environmental protection, and the well-being of all residents. By implementing this plan, the municipality aims to achieve efficient, cost-effective, and environmentally responsible solid waste management that supports public health, economic development, and a cleaner, safer urban environment for current and future generations.

Municipal Manager
Thika Municipality

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1. Introduction

Thika Municipality, located approximately 42 km northeast of Nairobi in Kiambu County, occupies a strategic position along the Nairobi–Nyeri highway and within the Nairobi Metropolitan Region, with proximity to the Thika and Chania Rivers enhancing its accessibility and development potential. The municipality covers about 201.3 km² and had a population of approximately 279,429 people as per the 2019 Kenya Population and Housing Census, with continued growth driven by urban expansion and migration. Economically, Thika is a key industrial and agro-processing hub, hosting numerous large and small-scale industries involved in textile manufacturing, food processing, motor vehicle assembly, and chemical production. The municipality also benefits from surrounding agricultural activities such as pineapple farming, coffee, and horticulture, which support processing industries. In addition, a vibrant commercial and service sector—including trade, education, and financial services—contributes significantly to its economic profile, positioning Thika as a critical driver of regional development.

Thika Municipality is a rapidly growing urban centre within Kiambu County with a mix of residential, commercial, industrial, and peri-urban areas. The Municipality also hosts the Kang'oki disposal site, which serves multiple municipalities within the County.

This Solid Waste Management Plan provides a practical framework to improve waste collection, transportation, recovery, and disposal systems. It focuses on strengthening existing operations such as skip-based collection, enhancing service coverage, improving coordination with private waste service providers, and promoting recycling and waste reduction.

1.1 Rationale for the Solid Waste Management Plan

The preparation of this ISWMP is informed by the need to transition from conventional waste collection and disposal approaches to a more integrated and sustainable system.

Key drivers include:

- Increasing waste generation due to urban growth and industrialization
- Environmental degradation from improper waste disposal
- Public health risks associated with unmanaged waste
- Need to align with national legislation and sustainability goals
- Opportunities for resource recovery, recycling, and job creation

The ISWMP adopts an integrated approach that incorporates technical, institutional, financial, and social dimensions of waste management. In addition, the Municipality's role as the host of the County's designated disposal facility introduces the need for integrated regional waste management planning, including cost-sharing mechanisms, controlled waste inflows, and upgrading of disposal infrastructure to meet environmental standards.

1.2 Key Objectives of the Plan

- Improve efficiency of waste collection and transportation
- Expand service coverage, especially in high-density and informal areas
- Strengthen coordination between municipal, private, and informal actors
- Promote waste reduction, reuse, and recycling
- Improve management of the disposal site
- Enhance financial sustainability of waste services

2. Waste Generation and Composition Assessment

Thika Municipality is experiencing increasing solid waste generation driven by rapid urbanization, population growth, and expanding commercial and industrial activities. Current estimates indicate that the municipality generates approximately 140 tons of solid waste per day, translating to about 51,000 tons annually, based on an average per capita waste generation rate of 0.5–0.65 kg

per person per day. The main sources of waste include residential households, commercial establishments such as markets and businesses, institutions (schools, hospitals, and offices), and a significant contribution from industrial activities given Thika's status as an industrial hub. Residential, commercial, and institutional sources collectively contribute the largest share of municipal solid waste, while industries generate substantial volumes of specialized and sometimes hazardous waste streams.

Estimated Waste Generation by Sector – Thika Municipality

Sector	**Estimated % Contribution**	**Daily Waste (Tons/Day)**
Residential	50	70
Commercial	15	21
Institutional	2	3
Industrial	33	46
Total	**100**	**140**

The composition of waste in Thika Municipality is largely dominated by organic (biodegradable) waste, which accounts for approximately 60–70% of the total waste stream, mainly from households and markets. Plastics constitute about 15–20%, reflecting increased use of packaging materials, followed by paper and cardboard (10–15%). Other components include glass and metals (2–5%), as well as electronic and hazardous waste in smaller proportions, mainly originating from industrial operations, healthcare facilities, and electronic use. This composition indicates a high potential for waste recovery through composting and recycling, particularly for organic waste and recyclable materials such as plastics, paper, and metals.

Waste generation in Thika Municipality is projected to increase steadily over time due to continued population growth, urban expansion within the Nairobi Metropolitan Region, and economic development. With ongoing densification and changing consumption patterns, especially increased use of packaged goods, both the quantity and complexity of waste are expected to rise. Projections suggest that without appropriate interventions, daily waste generation could significantly exceed current collection and disposal capacity in the coming years. This trend highlights the need for the municipality to strengthen integrated solid waste management systems, including waste minimization, source segregation, recycling, composting, and investment in sustainable disposal technologies to effectively manage future waste demands.

3. Existing solid waste management system

3.1 Waste Collection Systems

Waste transportation in Thika Municipality is carried out using a combination of municipal and private sector vehicles, supported by skip loaders for bulk waste handling. The Municipality utilizes tipper, side loader and Compactor trucks mainly for kerbside collection of commercial waste and transportation of waste from collection points to the disposal site. Skip loader truck is specifically used to empty skips in markets and high waste-generating areas and the transportation of bulk waste directly to the disposal site. Private waste service providers also operate their own vehicles to transport domestic and industrial waste.

Municipal Collection

The Municipality is primarily responsible for commercial waste and public space management. Municipal trucks are deployed mainly to manage waste in commercial areas, markets, institutions and streets and public spaces (through sweeping). Market waste is managed through a skip-based system, where skips

are strategically placed within markets and traders or vendors deposit waste directly into the skips. Skip loaders evacuate waste immediately once the skips are full. This system is effective in handling large volumes of organic waste generated daily in markets.

Private Sector Collection

Private waste service providers play a major role in the collection of domestic (household) and industrial waste. They operate mainly through door-to-door waste collection systems particularly in planned residential areas and industrial zones, transportation of waste to the disposal site, and informal segregation of recyclables before disposal.

However, service provision is affected by:

- Non-payment or low willingness to pay by households
- Inconsistent service standards
- Limited coordination with municipal operations
- Lack of structured data reporting

Informal Sector

Informal actors, including waste pickers and small-scale recyclers, who contribute to recovery of recyclable materials and reduction of waste volumes reaching disposal site, Kang'oki. Informal waste collectors operate mainly in informal settlements, markets and within the designated disposal site.

Their role includes collection in areas not served by formal systems and recovery of recyclables (plastics, metals, paper). At the disposal site, waste pickers are actively involved in sorting and recovery activities, supporting recycling value chains. However, their operations remain unregulated, unsafe and not formally integrated into the system.

Waste collection within Thika Municipality is largely driven by waste generation levels and operational efficiency**.** Areas with high population density and significant waste generation, such as Thika Township, Kamenu, and major commercial and market centres, receive more frequent and reliable collection services. This is supported by the deployment of municipal trucks for kerbside collection and the use of skips in high-volume areas.

The proximity to Kang'oki disposal site enhances collection performance by allowing collection vehicles to make multiple trips per day, resulting in faster waste evacuation and reduced accumulation in priority areas.

A key strength of the transportation system is the close proximity of the Kang'oki disposal site, which allows for faster turnaround of vehicles, multiple trips per day resulting to reduced fuel and operational costs as well as efficient evacuation of waste. However, the system faces challenges including the occasional breakdown of vehicles, limited number of trucks relative to demand and accessibility constraints in informal settlements

3.2 Waste Treatment and Disposal

All waste collected within Thika Municipality is disposed of at Kang'oki, which serves as the main disposal facility for Kiambu County. The site covers a large area and operates daily, receiving waste from multiple municipalities

The site primarily functions as an open dumpsite rather than a sanitary landfill where waste is largely deposited without advanced treatment and high waste inflows have led to overloading. Efforts have been made to improve the site through introduction of semi-aerobic landfill (Fukuoka method) to enhance decomposition and reduce emissions as well as rehabilitation works and infrastructure improvements.

Operational challenges include environmental risks (leachate, air pollution, groundwater contamination), encroachment and land pressure, poor access roads affecting transportation efficiency, especially during rainy seasons, and limited control systems (e.g., waste placement, access management). Despite these challenges, the disposal site remains critical to the Municipality's waste management system.

3.3 Waste Recovery and Recycling

Waste recovery and recycling in Thika Municipality is partially developed and largely driven by informal and private sector initiatives. Recovery of recyclable materials mainly takes place through privately owned Material Recovery Centre (MRC), buy-back centres and informal waste pickers operating in settlements, markets, and at the disposal site.

Recyclable materials such as plastics, metals, and paper are recovered and sold to recycling value chains, contributing to waste reduction and providing livelihoods. At the disposal site, waste picking and sorting activities are ongoing, allowing for recovery of materials before final disposal. However, the current system is not fully structured or integrated. There is no segregation of waste at source, limited coordination between collection and recovery systems and inadequate infrastructure for sorting and processing. As a result, a significant portion of recyclable and organic waste is still disposed of at the disposal site instead of being recovered.

3.4 Institutional Framework

Solid waste management in Thika Municipality is implemented through a multi-stakeholder system, with defined but sometimes overlapping roles among the County, Municipality, private sector, and community actors.

The Municipality is responsible for:

- Kerbside collection of commercial waste
- Management of skips in markets and public areas
- Transportation of waste using municipal trucks and skip loaders
- Disposal of waste at Kang'oki disposal site
- Supervision of waste management operations

The County Government provides:

- Policy direction and overall oversight
- Budget allocation for equipment and operations
- Support in infrastructure development, including disposal site management

Private waste service providers are responsible for:

- Door-to-door collection of domestic waste
- Collection and transportation of industrial waste
- Charging and collecting user fees for their services

Informal actors (including waste pickers and small-scale collectors) support:

- Waste collection in unserved areas
- Recovery of recyclable materials from households, markets, and the disposal site

Community-based organizations and youth groups are involved in:

- Waste collection in some neighbourhoods
- Cleaning activities in informal settlements and public spaces
- Awareness creation at community level

Key Coordination Gaps

- Limited coordination between municipal and private service providers

- Informal sector not formally integrated into the system
- Weak monitoring and reporting mechanisms

3.5 Financial Management

Solid waste management in Thika Municipality is financed through a combination of County government funding, municipal revenue, and user fees collected by private waste service providers. The County Government supports waste management operations through budgetary allocations for the purchase and maintenance of equipment such as trucks, skip loaders, and skips, as well as operational costs including fuel, staffing, and management of the dumpsite. The Municipality also generates revenue from waste-related charges, particularly within commercial areas, which contributes to ongoing service delivery. Private waste service providers sustain their operations through user fees charged to households and industries for door-to-door waste collection services. However, the system faces several financial challenges, including low cost recovery, high operational costs, and limited funding for expansion of infrastructure and services. In addition, unwillingness or inability to pay for waste collection services, especially in informal settlements, affects the sustainability and coverage of waste management operations.

4. Waste Management Goals and Objectives

This plan outlines both short-term and long-term goals aimed at improving the efficiency, coverage, and sustainability of solid waste management in Thika Municipality.

4.1 Short-Term Goals (1–3 Years)

- **Improve waste collection coverage and efficiency**

Expand and optimize waste collection services to ensure more consistent coverage across the Municipality, with particular focus on high waste-generating

areas and currently underserved settlements. This includes better truck deployment, improved routing, and timely waste evacuation from collection points and skips.

- **Strengthen the skip-based collection system**

Improve the effectiveness of the existing skip system by ensuring strategic placement in high waste-generating areas such as markets and busy commercial zones, and maintaining timely emptying using skip loaders as soon as skips are full to avoid overflow and illegal dumping.

- **Increase public awareness on waste handling and segregation**

Promote proper waste handling practices and gradual adoption of waste segregation at source among households, businesses, and institutions through targeted awareness campaigns and community engagement.

- **Enhance coordination with private waste service providers**

  Improve collaboration between the Municipality and private waste collectors to ensure better service coverage, adherence to standards, and alignment of operations, particularly in areas served through door-to-door collection.

- **Strengthen waste recovery and composting initiatives**

Improve the functionality of the Material Recovery Centre (MRC) and support small-scale composting initiatives, especially for organic waste from markets, to reduce the volume of waste transported to the disposal site.

4.2 Long-Term Goals (5–10 Years)

- **Reduce waste disposed at the dumpsite**

Significantly decrease the volume of waste transported to Kang'oki disposal site by expanding recycling, composting, and recovery systems, with a focus on diverting organic and recyclable materials.

- **Improve disposal site management**

Upgrade and manage the dumpsite in a more controlled manner, including better waste placement, access control, and environmental management to reduce risks such as pollution and encroachment.

- **Establish structured waste segregation and recovery systems**

Develop and implement organized systems for segregation at source, collection of segregated waste, and linkage to recycling and recovery facilities to improve efficiency and resource utilization.

- **Increase diversion of recyclable and organic waste**

Enhance the recovery of plastics, paper, metals, and organic waste through improved collection systems, support to recycling enterprises, and expansion of composting initiatives.

- **Promote a circular economy approach**

Encourage reuse, recycling, and value addition to waste materials by strengthening linkages between waste generators, collectors, and recycling industries, creating opportunities for economic activities and job creation.

5. Waste Management Strategies

5.1 Waste Minimization

Education and Public Awareness Campaigns

The Municipality will implement targeted awareness campaigns to promote waste reduction and proper handling practices among residents, businesses, and institutions. These campaigns will focus on reducing waste at source through practices such as minimizing single-use plastics, reusing materials, and proper handling of organic waste.

Special emphasis will be placed on high waste-generating areas such as markets and commercial centres, where behavior change can significantly reduce waste volumes. Community engagement, public barazas, and collaboration with local groups will be used to improve awareness and encourage responsible waste practices.

Partnerships with Businesses

The Municipality will work with businesses, including supermarkets, industries, and market associations, to promote waste reduction practices. This will include encouraging the use of environmentally friendly packaging, reduction of plastic waste, and improved handling of waste within business premises.

These partnerships will help reduce the amount of waste entering the collection system and support overall waste minimization efforts.

5.2 Waste Segregation

Segregation at Source

Waste segregation will be introduced progressively, starting with pilot areas such as markets, institutions, and selected residential areas. The focus will be on separating organic waste from recyclable materials to support composting and recycling initiatives. Awareness campaigns and simple guidelines will be used to promote segregation at household, business, and institutional levels.

Collection Systems for Segregated Waste

The Municipality will gradually introduce systems to handle segregated waste, including the use of color-coded containers where feasible. In markets and high waste-generating areas, segregation will be integrated into the existing skip system by designating specific skips or sections for different waste types. Segregated waste streams will be linked to the Material Recovery Centre (MRC) and composting initiatives to ensure proper utilization.

5.3 Collection Systems

Door-to-Door Collection

Door-to-door collection will be strengthened through private waste service providers, with efforts to expand coverage in residential areas and improve service reliability. The Municipality will enhance coordination, supervision, and monitoring of these providers to ensure consistent service delivery. Focus will also be placed on gradually extending services to underserved areas through structured approaches and collaboration with local actors.

Public Waste Bins

Additional public waste bins will be installed in strategic locations such as markets, bus stages, and public spaces. Where possible, bins will be designed to support waste segregation and reduce littering. Placement of bins will be based on waste generation patterns to ensure effective utilization.

Collection Frequency

Collection frequency will be aligned with waste generation levels. High waste-generating areas such as markets and commercial centres will receive more frequent collection, supported by timely evacuation of skips once full. This approach will reduce waste accumulation, prevent overflow, and minimize illegal dumping.

Collection Zoning

The Municipality will adopt a zoning approach to improve planning and efficiency of waste collection. The Municipality will be divided into service zones based on population density, waste generation, and accessibility. This will support better allocation of trucks, skips, and personnel, and improve monitoring of service delivery.

5.4 Transportation Infrastructure

Identify Waste Transportation Needs

The Municipality will assess current transportation capacity in relation to waste generation and service coverage to identify gaps in equipment and operational efficiency.

Plan and Procure Equipment

Based on identified needs, the Municipality will prioritize maintenance of existing equipment and, where necessary, procure additional trucks and equipment, including tippers, compactors, side loaders, and skip loaders.

Optimal Deployment

Transportation resources will be deployed based on collection zones and priority areas. High waste-generating areas will be prioritized to ensure timely waste evacuation.

The Municipality will continue to leverage the proximity to Kang'oki disposal site to maximize the number of trips per day and improve overall transportation efficiency.

5.5 Recycling and Resource Recovery

Recycling Facilities

The Municipality will strengthen the operations of the Material Recovery Centre (MRC) to improve sorting and recovery of recyclable materials. Support will also be provided to private buy-back centres and recycling enterprises.

Efforts will be made to link collection systems with recycling activities to ensure that recoverable materials are diverted before reaching the dumpsite.

Composting

Composting initiatives will be promoted, particularly for organic waste from markets and households. The Municipality will support small-scale and decentralized composting systems in markets and institutions to reduce the volume of waste transported to the dumpsite.

5.6 Waste Disposal

Disposal Site Management

Management of Kang'oki disposal site will be improved through better control of waste placement, access, and site operations. Measures will be taken to enhance efficiency and reduce environmental risks.

Leachate and Gas Management

The Municipality will introduce measures to manage environmental impacts at the dumpsite, including controlling leachate and emissions resulting from decomposing organic waste.

Appropriate Waste Treatment Technologies

In the long term, the Municipality will explore appropriate waste treatment options such as composting and other feasible technologies for managing organic and residual waste, based on financial and operational feasibility

6. Institutional Capacity and Regulatory Framework

6.1 County/Urban Areas Governance and Institutional Roles

Thika Municipality operates within the broader governance framework of Kiambu County, with clearly delineated responsibilities for effective solid waste management. The municipal authority is primarily responsible for planning, coordinating, and supervising waste management services within its jurisdiction. Key roles include:

- **Municipal Authority:** Planning and implementing waste collection, transportation, disposal, and recycling programs; setting local by-laws and enforcement mechanisms; overseeing contracts with private waste management operators.
- **Waste Management Agencies:** Specialized agencies, either county or national, provide technical support, monitoring, and enforcement of environmental standards. This includes oversight of landfill operations, composting facilities, and waste treatment plants.
- **Private Sector Players:** Licensed waste collection companies and recyclers are engaged through service contracts to provide efficient collection, sorting, recycling, and disposal services.
- **Public Sector Partners:** Other municipal departments, such as health, planning, and public works, coordinate to ensure waste management integrates with sanitation, public health, and urban development initiatives.

6.2 Regulatory Compliance

Thika Municipality ensures all waste management operations comply with national laws and standards. Key regulatory frameworks include:

- **National Environment Management Authority (NEMA) Guidelines:** Waste handling, disposal, and pollution control must meet NEMA

standards to safeguard environmental and public health as guided by Environmental Management and Coordination Act, Cap 387.

- **Sustainable Waste Management Act, 2022:** Governs the sustainable handling of solid and hazardous waste, including waste reduction, segregation at source, recycling, and disposal practices.
- **County By-laws and Local Regulations:** Municipal authorities adopt localized rules to complement national regulations, enforce compliance, and facilitate licensing of private waste operators.

6.3 Public-Private-People Partnerships (PPPPs)

Thika Municipality promotes collaborative models to enhance waste management efficiency and innovation:

- **Private Sector Participation:** Engaging private companies for collection, transport, recycling, and treatment of waste, leveraging their expertise and technology.
- **Community Participation:** Citizens are encouraged to participate in recycling initiatives, composting, and reporting illegal dumping.
- **Partnership Models:** PPPPs are structured to share responsibilities and risks, including cost-sharing arrangements, service agreements, and incentive programs for community-based waste initiatives.

6.4 Community Engagement

Inclusive waste management in Thika requires active community involvement:

- **Awareness and Education Programs:** Conduct regular campaigns to educate residents about waste segregation, recycling, and responsible disposal.
- **Engagement in Informal Settlements:** Work with local organizations, community-based groups, and youth associations to provide solutions

that are practical and accessible in densely populated or underserved areas.

- **Feedback Mechanisms:** Establish channels for residents to report issues, provide suggestions, and participate in monitoring service delivery, ensuring transparency and responsiveness.

This framework ensures that Thika's solid waste management is not only compliant with national policies but also inclusive, participatory, and capable of leveraging private sector efficiencies alongside community engagement.

7. Public Education, Awareness and Stakeholder Engagement

7.1 Public Education Campaigns

Public education is critical for creating a culture of responsible waste management in Thika. Education campaigns should aim to inform residents and businesses about best practices and motivate behavioral change:

- Waste Segregation and Separated Collection**:** Educate households and institutions on separating biodegradable, recyclable, and hazardous waste at source. This improves recycling efficiency and reduces landfill burdens.
- Recycling Awareness: Highlight the economic and environmental benefits of recycling, including promoting local recycling initiatives and encouraging uptake of composting for organic waste.
- Responsible Waste Disposal: Emphasize avoiding illegal dumping and using designated disposal points or licensed waste collectors. Use local media, social media, flyers, workshops, and community forums to reach diverse audiences.
- School and Youth Programs: Integrate waste management education into school curricula and youth programs to foster long-term behavioral change.

7.2 Stakeholder Consultation

Engaging stakeholders ensures that waste management strategies are practical, inclusive, and widely supported:

- Residents: Conduct community meetings, focus groups, and surveys to understand local needs, identify challenges, and incorporate resident suggestions into program design.
- Businesses: Collaborate with commercial enterprises to reduce packaging waste, encourage recycling, and adopt environmentally friendly practices.
- NGOs and Community-Based Organizations (CBOs): Leverage their networks to expand outreach, implement community-level waste initiatives, and support informal sector waste workers.
- Government and Regulatory Bodies: Involve county and national agencies for guidance, compliance monitoring, and technical support.

7.3 Feedback Mechanisms

Feedback systems are essential for monitoring service quality and improving waste management:

- Complaints and Reporting Channels: Establish hotlines, SMS platforms, WhatsApp groups, and online portals for residents to report missed collections, illegal dumping, or unsafe disposal practices.
- Regular Surveys and Assessments**:** Conduct periodic satisfaction surveys to gauge community perception of waste management services and identify areas needing improvement.
- Transparent Communication: Ensure the municipality communicates how feedback has been addressed, building trust and encouraging community participation.

7.4 Social Inclusion and Gender Integration

A socially inclusive waste management strategy ensures all community members benefit and contribute:

- Identifying Vulnerable Groups: Include women, youth, elderly, persons with disabilities, and informal waste collectors in program planning and service delivery.
- Gender Integration: Recognize that women are often primary managers of household waste; involve them in awareness programs, decision-making forums, and income-generating recycling initiatives.
- Empowerment Opportunities: Promote participation of marginalized groups in recycling enterprises, composting projects, and other waste-to-resource activities, enhancing both social equity and economic inclusion.

This integrated approach ensures Thika's waste management is not only technically sound but also socially sustainable, inclusive, and responsive to the community's needs.

8. Financial Strategy

8.1 Revenue Sources

A sustainable financial strategy for Thika's waste management requires identifying diverse and reliable sources of funding:

- **Government Budget Allocations:** The municipal and county governments should provide dedicated budget lines for waste collection, transportation, disposal, and recycling. Regular budget allocations ensure core operational continuity.
- **User Fees:** Residents, businesses, and institutions should contribute through structured service fees for waste collection. Tiered fees can be applied based on waste volume or type, promoting fairness and efficiency.

- **Private Sector Investments:** Encourage private companies to invest in waste management services, recycling plants, and treatment facilities, potentially through concessions, joint ventures, or service contracts.
- **Donor and Development Partner Support:** Seek grants or technical assistance from NGOs, development agencies, and international partners to supplement municipal resources, particularly for innovative waste reduction or recycling initiatives.

8.2 Cost Recovery

To ensure financial sustainability, Thika Municipality must implement strategies to recover operational costs:

- **User Fee Structures:** Introduce or adjust fees based on collection frequency, service level, and waste type. Incentives for households and businesses that reduce or segregate waste can encourage compliance and efficiency.
- **Revenue Tracking and Accountability:** Maintain transparent financial systems to track fee collection, expenditure, and investment returns. Regular audits build trust with the community and investors.
- **Efficiency Measures:** Optimize collection routes, reduce fuel costs, and improve equipment utilization to lower operational costs and enhance cost recovery.

8.3 Public-Private-People Partnerships (PPPPs)

PPPPs provide opportunities to mobilize additional funding and technical expertise:

- **Infrastructure Financing:** Partner with private sector actors to finance, construct, and operate recycling plants, composting facilities, and waste transfer stations.

- **Shared Revenue Models:** Develop agreements where private partners share revenue from recyclables, energy-from-waste projects, or compost sales, reducing the municipality's upfront capital burden.
- **Community Participation:** Engage community groups in small-scale recycling, composting, and waste collection initiatives, creating income-generating opportunities while supporting service delivery.

8.4 Financial Projections

Long-term planning requires realistic projections for investments and expenditures:

- **Short-Term (0–2 Years):** Estimate costs for essential equipment, waste collection vehicles, bins, protective gear, and initial public awareness campaigns. Include operational costs for staffing, fuel, maintenance, and disposal fees.
- **Medium-Term (3–5 Years):** Account for expansion of collection coverage, construction of small-scale transfer stations, investment in recycling equipment, and training of personnel.
- **Long-Term (6–10 Years):** Include major infrastructure projects such as large-scale composting plants, recycling hubs, and integrated waste treatment facilities. Project expected revenue streams from user fees, recyclables, energy recovery, and partnerships.
- **Scenario Planning:** Incorporate sensitivity analyses for variables such as population growth, waste generation rates, inflation, and service expansion, ensuring financial sustainability under different conditions.

9. Monitoring and Evaluation

9.1 Key Performance Indicators (KPIs)

KPI	Definition	Target	Frequency	Responsible Entity

Amount of waste collected per day	Total tonnes of solid waste collected across the municipality	50 tonnes/day	Daily	Municipal Waste Department
Percentage of waste diverted from landfills	Proportion of total waste sent to recycling, composting, or energy recovery	30%	Monthly	Waste Management Unit
Amount of waste recycled	Total tonnes of recyclable waste processed	10 tonnes/month	Monthly	Private recyclers/municipality
Coverage of waste collection	% of households and businesses receiving regular collection services	90%	Quarterly	Municipal Waste Department
Reduction in illegal dumping incidents	Number of reported illegal	20% reduction/year	Quarterly	Environmental Inspectorate

	dumping cases			
Equipment availability	% of operational collection vehicles and equipment	95%	Monthly	Fleet Manager / Waste Department

9.2 Monitoring Mechanisms

Monitoring will be conducted through:

- **Data Collection:**
  - Daily waste collection records from field teams.
  - Monthly recycling and diversion reports from private partners.
  - Incident reports for illegal dumping from inspections and community feedback.
- **Reporting Framework:**
  - Field teams submit weekly reports to the Waste Department.
  - Consolidated monthly and quarterly reports are reviewed by municipal management.
  - Annual performance report shared with stakeholders and the public.
- **Review and Adjustment:**
  - Compare actual performance against targets.
  - Identify gaps or operational challenges.
  - Adjust collection schedules, resource allocation, or public awareness campaigns accordingly.

9.3 Periodic Reviews and Updates

To ensure Thika's Solid Waste Management (SWM) Plan remains effective and responsive, regular reviews and updates are essential. These periodic assessments allow the municipality to adapt to population growth, urbanization, and evolving community needs, while integrating technological advancements such as improved recycling methods, composting, and digital tracking systems. They also ensure that the plan remains aligned with national and county regulations, including EMCA Cap. 387 and the Sustainable Waste Management Act 2022, and that operational procedures are continuously improved based on monitoring and evaluation data.

The review process involves collecting and analyzing operational and financial data, engaging stakeholders—including residents, businesses, NGOs, and private waste operators—and revising the plan to incorporate feedback, technological upgrades, and updated resource requirements. Reviews are conducted at multiple levels: annual operational assessments to address immediate service adjustments, mid-term evaluations every 3–5 years for infrastructure and workforce planning, and comprehensive full plan updates every 5–10 years to reassess long-term strategy, funding, and compliance frameworks.

By conducting periodic reviews, Thika ensures that its SWM Plan remains relevant, efficient, and sustainable. This approach promotes better resource allocation, improved service coverage, stakeholder confidence, and the adoption of innovative waste management solutions, while enabling the municipality to respond proactively to changing urban and environmental dynamics.

10. Implementation Timeline

Phase 1 (0–3 Years): Waste Collection & Awareness

Objective	Key Activities	Timeline	Responsible Entity
Improve waste collection system	Optimize collection routes, procure additional vehicles, provide collection bins	Year 1–3	Municipal Waste Department
Public education & awareness	Conduct campaigns on segregation, recycling, and responsible disposal	Year 1–3	Environmental Education Unit
Initial infrastructure upgrades	Construct small transfer stations, install recycling bins in public spaces	Year 2–3	Waste Management Unit / Private Contractors

Phase 2 (3–5 Years): Waste Treatment & Recycling Expansion

Objective	Key Activities	Timeline	Responsible Entity
Expand disposal & treatment capacity	Upgrade disposal sites, establish composting facilities	Year 3–5	Municipal Waste Department
Implement recycling plants	Begin construction/operation of small-scale recycling plants for plastics, metals, and organic waste	Year 4–5	Private Sector Partners / Municipality

Objective	Key Activities	Timeline	Responsible Entity
Strengthen operational efficiency	Train staff on new facilities, monitor performance	Year 3–5	Waste Management Unit

Phase 3 (5+ Years): Advanced Waste Management & Diversion

Objective	Key Activities	Timeline	Responsible Entity
Full recycling program implementation	Expand recycling to all wards, integrate informal waste collectors into formal system	Year 5+	Municipal Waste Department / PPPPs
Waste diversion strategies	Implement waste-to-energy projects, promote composting at household and community level	Year 5+	Private Partners / Municipality
Advanced treatment technologies	Introduce modern waste processing technologies (e.g., anaerobic digestion, material recovery facilities)	Year 5+	Municipal Waste Department / Technical Partners
Continuous monitoring & improvement	Review system performance, update plans, scale successful initiatives	Year 5+	Waste Management Unit / Environmental Department

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