



**COUNTY GOVERNMENT  
OF TAITA TAVETA**

Department of Water, Sanitation, Environment,  
Climate Change & Natural Resources

# Municipal Solid Waste Management Strategy



Funded by  
the European Union



Sea - Land of Opportunities, Shared Prosperity







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Preface by

## Oumar Sylla

Director (a.i), Regional Office for Africa, UN-Habitat

This Solid Waste Management Strategy Document provides a roadmap for addressing the solid waste challenges facing Taita Taveta County. The roadmap is in the form of an action plan focusing on: Policy and legal framework; Collection and transportation services; Waste Recovery and Circular Economy; Waste Disposal; Financial Sustainability; Inclusive Participation; and Data and Monitoring

The Strategy Document builds upon the municipal solid waste audit report that was developed earlier and that identified the key challenges and priority areas that the county of Taita Taveta should focus on including full transition towards a circular economy.

The Strategy Document is prepared as part of the Go Blue Project funded by the European Union. It provides a basis for upgrading of the Solid Waste Material Recovery Facility (MRF) at Chakaleri, that will contribute towards minimization of flow of waste from land into the ocean for a sustainable blue economy. It is our hope that Taita Taveta County will be a leader in sustainable solid waste management given this good start.



Foreword by

## H.E Andrew Mwadime

Governor, Taita Taveta County



This Solid Waste Management Strategy has an Action Plan focusing on formulation of a strong and reliable solid waste management legal and policy regime, collection and transportation services, waste disposal, recovery and circular economy as well as inclusive participation of local communities. The Strategy further focuses on financial sustainability and data and reporting as key areas that my government will focus on while addressing the urban waste challenge.

As you may already be aware, Taita Taveta is one of the six coastal counties of Kenya. The county's three main rivers, namely, Tsavo, Lumi and Voi, flow into the Indian Ocean. The county is home to major national parks and other tourist attraction sites such as Tsavo West and Tsavo East National Parks, Taita Hills Wildlife Sanctuary, LUMO Community Wildlife Sanctuary, Taita Hills, Lake Jipe and Chala, among others. With these magnificent sites, Taita Taveta county is considered to be "The Mothers of Reverend Beauty" in Kenya, with tourism being one of its historical economic activities, with yet, so much untapped potential. Besides being a threat to natural ecosystems and human health, poor municipal solid waste management (MSWM) continues to negatively affect tourism activities in the county further undermining the economic potential of the county.

In order to commence the journey towards sustainable waste management, my government, with the support of the United Nations Human Settlements Programme (UN-Habitat), has prepared this Solid Waste Management Strategy to address key issues affecting the county and to provide a clear waste management roadmap.

I sincerely thank UN-Habitat, the JKP and the European Union Delegation to Kenya for the collaboration that has led to the formulation of this Solid Waste Management Strategy for Taita Taveta County.



## Grantone Mwandawiro

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Water, Environment, Sanitation, Climate Change & Natural Resources.  
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County Government of Taita Taveta.



The preparation of this Municipal Solid Waste Management Strategy has been made possible through the continuous engagement and precious contribution of numerous stakeholders, to whom the County Government would like to express its sincere gratitude.

I would like to start by thanking all the citizens of Taita Taveta County who participated in the data collection process and the waste stakeholders including women and youth who participated and contributed to the various workshops and visioning a sound and circular future. We thank you all.

Special acknowledgements go to the Go Blue Project Team, the European Union Delegation to Kenya Special and to the Jumuiya Ya Kaunti Za Pwani (JKP). I particularly thank Florian Lux, Jeremiah Ougo, Francesca Calisesi, Joyce Klu and Nao Takeuchi from UN-Habitat for their technical and coordination support during the preparation of this Strategy as well as Emmanuel Nzai for his continued support.

My fellow county staff who were instrumental in this process cannot go unmentioned. They include Ag. Chief Officer Patrick Wadu and Sub-County Administrator Michael Ruel Mwawasi as well as Hellen Masaka, Joan Lavoga, Silvester Mwakoma and David Livingston Moto.

Most importantly, I thank H.E Andrew Mwadime, the Governor of Taita Taveta County, for recognizing the importance of a sound municipal solid waste management system in delivering environmental, social, and economic benefits for local communities and for promoting a sustainable blue economy.

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# Acronyms

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<b>3Cs</b>	Confine, Compact, Cover
<b>5Rs</b>	Rethink, Refuse, Reduce, Reuse, Recycle
<b>AICS</b>	Italian Agency for Development Cooperation
<b>CE</b>	Circular Economy
<b>CECM</b>	County Executive Committee Member
<b>CBO</b>	Community Based Organisation
<b>CBD</b>	Central Business District
<b>CD</b>	Capacity Development
<b>CO</b>	Chief Officer
<b>DCA</b>	Data collection Application
<b>ESIA</b>	Environmental and Social Impact Assessment
<b>EPR</b>	Extended Producer Responsibility
<b>EU</b>	European Union
<b>GHG</b>	Greenhouse gases
<b>GIZ</b>	The German Agency for International Development
<b>HH</b>	Household
<b>HDPE</b>	High Density Polyethylene
<b>IFC</b>	International Finance Cooperation
<b>ISWM</b>	Integrated Solid Waste Management
<b>LDPE</b>	Low Density Polyethylene
<b>MSW</b>	Municipal Solid Waste
<b>MSWM</b>	Municipal Solid Waste Management
<b>MRF</b>	Materials Recovery Facility
<b>MSME</b>	Micro-Small- and Medium-Enterprises
<b>NEMA</b>	National Environment Management Authority
<b>NHIF</b>	National Health Insurance Fund
<b>NSSF</b>	National Social Security Fund
<b>PET</b>	Polyethylene Terephthalate
<b>PP</b>	Polypropylene
<b>PPE</b>	Personal Protective Equipment
<b>PPP</b>	Public-Private Partnership
<b>UN-HABITAT</b>	United Nations Human Settlements Programme
<b>UNEP</b>	United Nations Environment Programme
<b>SDGs</b>	Sustainable Development Goals
<b>SWM</b>	Solid Waste Management
<b>T/DAY</b>	Tonnes per day
<b>WaCT</b>	Waste Wise Cities Tool
<b>WFD</b>	Waste Flow Diagram
<b>WABIs</b>	Wasteaware Benchmark Indicators

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## Executive Summary by

The Waste Management Strategy for Taita Taveta County sets out the necessary strategic interventions for improving SWM in the county at every step of MSWM system. The strategy responds to the National Sustainable Waste Management policy especially in the strengthening of the institutional framework, setting up transparently managed financial mechanisms and implementing the waste hierarchy and circular economy concepts for improved management of MSW. The Strategy is also aligned with national and sub-national plans and regulations such as National SWM strategy 2015, The National Climate Change Action Plan 2018–2022, The National Sustainable Waste Management Act 2022, Waste Management Regulations 2006, among others.

The development of the strategy was further informed by the results of the Taita Taveta County Waste Audit that was conducted using SDG indicator 11.6.1 baselining and the

In the short-medium term, the key targets of the strategy include;

- Developing and enforcing local waste regulations particularly those pertaining to mandatory payment of waste collection services, littering, source separation and 5Rs and extended producer responsibility.
- Increasing the current waste collection coverage from 30% to at least 50% by incorporating and building the capacities of CBOs and youth groups to provide primary waste collection services.
- Investing in at least 1 new collection vehicle of 10 tonnes capacity for Taveta sub-county.
- Constructing and operationalising at least 2 MRFs, one at Chakaleri dumpsite in Voi and another one in Taveta Sub- County, to boost recovery activities to at least 10% from the current 1%.
- Pilot test waste separation at source in 2 residential zones.
- Relocating Chakaleri dumpsite and ensuring the new site is designed and operated at a basic level of environmental pollution control according to the WaCT methodology
- Improving the existing open dumpsite in Riata, to at least a basic level of environmental pollution control according to the WaCT methodology.
- Increasing the annual budget for SWM from the current KES 3 million to at least KES 5 million with specific budget lines for fuel, repairs and maintenance of collection vehicles.
- Creating at least 500 jobs for the youths and women through collection and recovery activities.
- Preparing technical and financial proposals for attracting investment in construction of sanitary engineered landfills, construction of an all-weather road leading to Riata dumpsite, acquisition of collection vehicles and heavy machinery. The proposals will be submitted to relevant financial institutions for grants and loans.

inputs from all the relevant stakeholders in MSWM in Taita Taveta County. The Waste Audit, launched by the Governor of 26 January 2023, indicated that out of the 195 tonnes of MSW generated in Taita Taveta County, only 30% is collected of which only 1% goes to recovery. The uncollected waste is left on land, drains or burned while the collected waste is disposed at designated open dumpsites without any environmental pollution control with devastating impacts on the environment.

To realistically improve the current MSWM situation in Taita Taveta County, the strategy has set practical short-medium term goals, to be achieved within 5 years of the launch of the strategy and long-term goals for 5-10 years.

In the long term, the key targets of the strategy include;

- Operationalizing full source separation, wet and dry fractions, for all households and commercial & institutions.
- Investing in composting/organic waste recovery infrastructure, 5 additional clean MRFs, at least 3 collection vehicles and heavy machines (compactors, bulldozers and excavators) for the operation and maintenance of designated disposal sites.
- Create additional 500 jobs for the youths and women through collection and recovery activities
- Collecting at least 80% of all the waste generated
- Improving the status of the disposal sites from Basic control to Improved or Full control i.e., sanitary engineered landfills according to WaCT methodology and in compliance with the National Sustainable SWM policy 2019.

To achieve these targets, the strategy is divided into 7 strategic components, see Figure 1. Each strategic component provides guidance of the design, implementation and management of the whole MSW system and infrastructure for a sustainable and integrated management of MSWM in Taita Taaveta County.

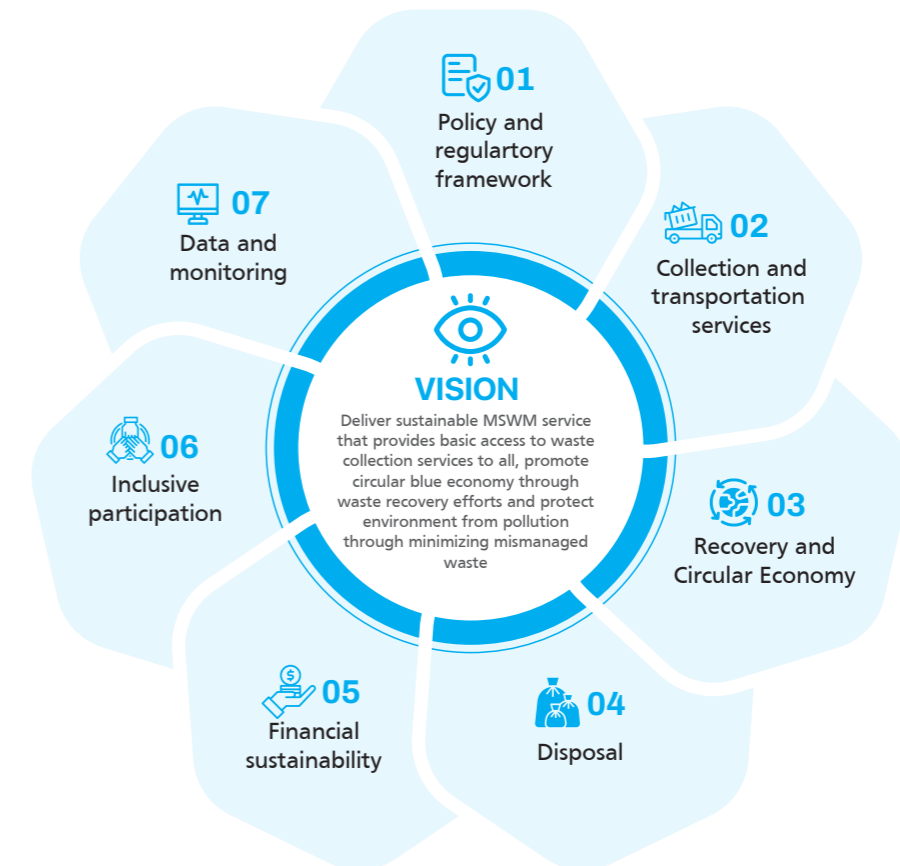


Figure 1: Components of the strategy.





— CHAPTER —

# 01

## Basis of the Strategy





# 1.1 Background to the initiative

The Go Blue Project is funded by the European Union, being co-implemented by the United Nations Human Settlements Programme (UN-Habitat), the United Nations Environment Programme (UNEP), Government of Kenya, GIZ, Italian Agency for Development Cooperation (AICS), Camoes -Portugal, and Expertise France.

The Go Blue Project 'Result Area 2: Connecting People, Cities and the Ocean: Innovative Land-Sea Planning and Management for a Sustainable and Resilient Kenyan Coast' is implemented by UN-Habitat and UNEP and aims at enhancing land-sea planning and management by addressing key socio-economic and environmental challenges while stimulating benefits from the blue economy. Specific objectives of the Result Area 2 of the Project include: developing an integrated, ecosystem-based land-sea planning framework that guides all other spatial planning and management activities for sustainable use and conservation of the blue economy in Kenya's 6 coastal counties - Mombasa, Kwale, Kilifi, Lamu, Taita Taveta and Tana River - under the coast regional economic block (JKP); enhancing technical and human capacity for integrated, ecosystem-based land-sea planning and management through capacity building interventions; and the implementation of pilot project activities in selected urban areas and communities of the six counties. Through these activities, the Project lays the basis of and

contributes to a sustainable blue economy in Kenya.

In Taita Taveta County, the project supported county to improve its Municipal Solid Waste Management (MSWM) system to reduce and prevent plastic and other waste streams leaking into the environment, including water bodies. This was achieved by carrying out a waste audit using SDG indicator 11.6.1 baselining and developing an integrated MSWM strategy for Taita Taveta County focusing on its four urban areas: Mwatate, Taveta, Voi and Wundanyi, which have an estimated population of 360,000, majority of whom live in the urban and peri-urban areas without adequate and reliable MSWM system.

The strategy development was informed by the analysis on the recent national MSWM policies and plans; relevant local regulations; waste audit using SDG indicator 11.6.1 baselining; prioritized needs from the county government and local best practices.



Figure 2: Basis of the strategy

# 1.2 National and local SWM policy, plans/strategies and regulations.

At the national level, Kenya has several policies, strategies and regulations related to MSWM. At the local level, however, Taita Taveta County does not have a legislative framework (regulations, laws, policies, strategies, plans) specifically dedicated

to SWM. The only existing regulation that mentions SWM is the County Finance Act 2017. This section will give a brief overview of each policy and regulation related to MSWM.

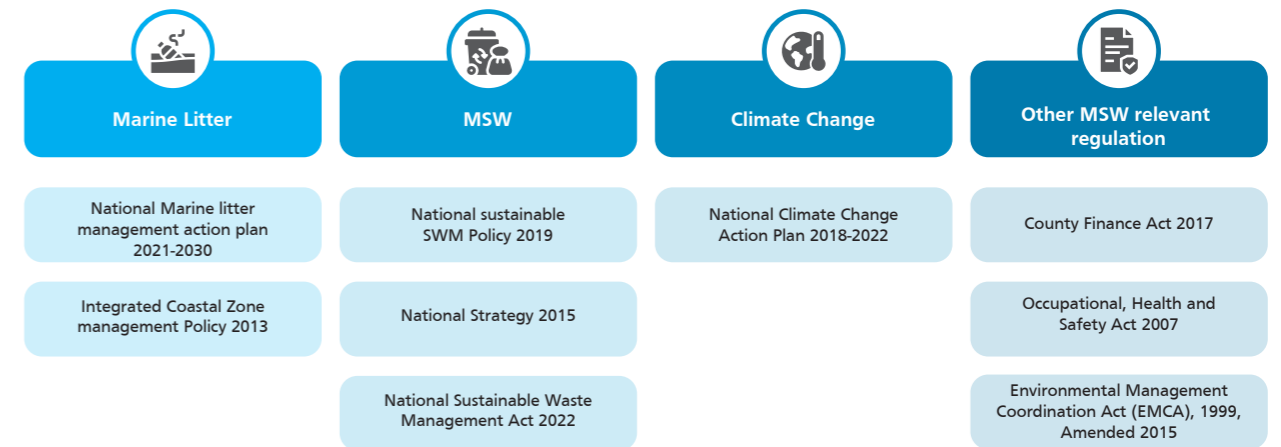


Figure 3: Overview of the National and local SWM policy, plans/strategies and Regulations





## 1.2.1 The National Sustainable Solid Waste Management Policy, 2019

The National Sustainable SWM Policy provided for a governance framework for SWM at national and county level. Under the policy, counties shall:

- Implement **the waste hierarchy** by promoting 5Rs, circular economy and formulation of relevant regulations.
- **Transit from Dumpsites to Landfills** by developing regulations and levying structure to promote the **closure of open dumpsites** and establish **engineered landfills** for disposal of non-recoverable fractions of wastes only.
- Ensure that **landfills are only used for residual waste** that has no commercial value left out after segregation process at a Materials Recovery Facility (MRF).
- Set up **data collection system** of the county waste streams, volumes generated and how they are handled and register service providers to ensure that all policy and regulatory decisions at the county level are informed by and based on credible data.
- **Ensure waste is segregated at source** by (i) enforcing waste fractions segregation based on the national gazetted minimum waste fractions for **all waste generators** including household level, (ii) ensuring waste service providers provide **separate waste segregation containers** to enable sorting at source of organic waste, recyclable and non-recyclables and educate the waste generators on the prescribed sorting categories and methods and, (iii).carrying out county public awareness on **waste colour codes** and importance of proper sorting in all public labelled bins for easier sorting.
- **Ensure waste collection services for all citizens** by; (i) establishing “ **community and public collection centres**“ guided by the principle of proximity, where the public can discard a variety of recyclable household waste such as paper, cardboard, glass, plastic, & metal including electronic products and hazardous waste, (ii) Prescribing the design, the size, construction and maintenance of public waste receptacles for purpose of **access and emptying**, (iii) authorising placing of **waste receptacles on county roads and markets**, (iv) holding property owners, landlords and caretakers **responsible for waste dumped in front and around their facilities** and, (v) cooperating with **Resident Associations** to eliminate waste dumping within their jurisdiction.
- Ensure that waste service providers transport their waste to **materials recovery facilities (MRFs) and to landfills** in an environmentally friendly manner by; (i) developing guidelines that requires the collectors to provide **documentation tracking** waste collected from source and destination and, (ii) Ensuring waste **transportation trucks** adhere to air quality regulations.
- Publish annually a list of **licensed organizations** offering waste collection and transportation services and also supervise and regulate them to ensure they deliver effective waste management services to the materials recovery facilities in accordance to the waste hierarchy priority.
- Consolidate an **annual report of the MRFS** and submit to the **ministry responsible for environmental matters** and collect and transport residual waste from **MRF to the landfills**.
- **Strengthen their institutional framework** by developing 10 years SWM strategies/plans, Licence waste service providers including collector and transporters and mainstream county waste management oversight in the county environment committee.
- **Set up financial mechanisms** by Allocating resources for sustainable waste management actions in county budgetary processes, mobilise resources for sustainable waste management interventions, support waste management enterprises and promote the creation of green jobs in the waste sector.
- Provide semi-annual **reports and data** to the national waste management council showing how and when materials were collected within their jurisdiction, volume of materials recycled and measures undertaken to implement the waste hierarchy in the county.

- **Create awareness** by; (i) encouraging smart purchasing such as buying **right amount of goods like food so that none goes to waste**, (ii) providing timely information on waste management using diverse **platforms including their websites** and, (iii) collaborating with, and support, media, private sector and civil society in incorporating sustainable waste management into their **advocacy and public awareness raising programmes**.
- **Formalize of the informal sector** by; (i) assigning communal **waste collection centres and transfer stations to formalised and organised groups** to manage the services, (ii) mobilising communities especially in the informal settlements and supporting the formation of **community-based waste management groups or organisations** and, (iii) supporting waste management initiatives of the formalized groups through **County Waste Funds**.
- Develop and implement a sustainable **waste management capacity development strategy** targeting public institutions (ministries and counties) as well as private sector and informal groups within their jurisdiction.

**NOTE: This is a 10-year strategy and it addresses all the responsibilities mandated to the county government as listed above.**

## 1.2.2 Integrated Coastal Zone Management (ICZM) Policy, 2013

The Integrated Coastal Zone Management (ICZM) Policy, Sessional Paper No. 14 of 2014 provides for pollution control and waste management practices in the coastal counties. One of its key objectives is to promote sustainable economic development

to secure livelihoods of coastal communities through recycling activities and other economic activities. Further, the policy seeks to improve the management of municipal solid waste through:

- Empowerment of county governments to effectively manage municipal waste,
- Promotion of public private partnership in waste management,
- Strengthening of county governments to enforce laws for regulating municipal waste.

Under this policy, county governments shall adopt innovative ways to effectively manage both municipal wastewater and solid waste to mitigate environmental pollution.



### 1.2.3 National SWM strategy 2015

This strategy is guided by National SWM strategy developed by NEMA in 2015. The strategy stipulates that a waste audit in a county will guide the strategic implementation of approaches that improve SWM in the county. These include:

- Strategic alignment and recognition of partners through a public private partnership
- Introduction of incentives in the waste management cycle (generation, segregation, collection, transportation, treatment and disposal)
- Introduction of extended producer responsibility and public awareness campaigns and education;
- Establishment of efficiency and value addition in the waste management cycle
- Complement the input from CBO's and other private public activities.
- Phase out waste burning
- Establish waste operational zones
- Upscale the activities of the informal sector to link up with the existing formal recycling industries.
- Establishment of infrastructure and systems for residual waste through a stepwise phasing out of illegal dumpsites to establishment of sanitary landfills

### 1.2.4 National E-waste management strategy 2019 - 2024

The National E-waste Management Strategy is a five-year plan covering the period 2019/20 to 2023/24. The E-waste Strategy has five thematic areas aimed at resource mobilization for proper E-waste management, raising awareness, strengthening Kenya's E-waste coordination structures at national and county levels, put in place a monitoring and evaluation mechanism for E-waste management, promote research and innovation in E-waste management and have legal and regulatory framework for E-waste management in Kenya. Under this strategy, counties shall:

- Lead the establishment of appropriate mechanisms for collection, transportation, recovery and disposal of E-waste within the county.
- Harmonize county E-waste policies, Acts, regulation, guidelines and standards to the national legal and regulatory framework.
- Develop and Streamline funding mechanisms for E-waste management within the counties.

### 1.2.5 The National Sustainable Waste Management Act 2022

In response to the increasing waste generation and environmental impacts caused by the mismanagement of MSW as well as the devolution in 2012, the Ministry of the Environment and Forestry developed this national strategy, that was enacted in July 2022. Key regulations provided in relation to county government's roles for MSWM include:

- County governments, in consultation with relevant national government agencies, the public and other stakeholders, shall develop **county legislations on SWM within two years** of the coming into operation of this Act.
- Each county government shall establish a **material recovery facility, licensed by NEMA**, for sorting, composting and recycling and sanitary landfills for the disposal of non-recoverable waste
- All MSW generated by public and private entities i.e. business premises, institutions, government departments, etc shall be **sorted into organic and non-organic fractions** using properly labelled and colour coded receptacles, bins, containers and bags and shall be collected and transported as such by a licensed service provider.
- Any person who generates waste shall ensure it is separated at source and collected by a licensed service provider.
- Each county government shall prepare and submit to the county assembly for approval an **integrated county waste management plan once every five years**
- Each county government shall incentivise the collection and separation of waste at source in neighbourhoods and informal settlements.
- Each county government shall **maintain data on waste management service** provision by waste management service providers and submit to NEMA.

### 1.2.6 Environmental Management Coordination Act (EMCA), 1999, Amended 2015

This Act establishes a legal and institutional framework for environmental management in Kenya. Under this act, **the Waste management regulation 2006**, says that counties shall:

- Obtain from NEMA an Environmental and Social Impact (ESIA) license for Recovery and disposal facility and a license for disposal and renewed every year
- Designate, fence and man disposal sites
- Prevent burning of waste at disposal site and compact, confine and cover solid waste
- Obtain a license from NEMA for public vehicles transporting waste
- Provide authorization permit to private collectors to bring and drop MSW at the disposal sites
- Promote waste segregation at source and 5Rs approach



### 1.2.7 National Marine Litter Management Action Plan 2021–2030

The National Marine Litter Management Action Plan 2021 – 2030 guides stakeholders and provides a framework for cooperation to improve the status of Kenya’s marine and coastal environment and to combat marine litter. Under this action plan, counties shall;

- Be responsible for receiving, treating and managing waste from ports, fishing harbours, marinas and beach resorts.
- Ensure that plastic waste and other forms of waste do not find their way into the marine environment by providing reliable collection services and proper disposal.
- Organise and participate in beach clean-up activities together with national government, volunteers, NGOs, etc
- Adopt new and improve on the existing wastewater treatment technologies in each county to retain microplastics.

### 1.2.8 The National Climate Change Action Plan 2018–2022

The component related to waste management of this action plan is that it proposes the reduction of GHG emissions through adoption of circular approaches to waste management and engineered landfills. Under this action plan, counties shall:

- Develop a Climate Change Action Plan and an Act
- Within NDC, the county should come up with its own County Determined Contribution to support the national one.
- Set up a climate change fund to receive (and apply) to climate related resources.

## 1.3 Other policy and regulations related to MSWM

### 1.3.1 County Finance Act 2017

County Finance Act 2017 aims to guide and mandate the County Government to collect revenues from various sectors within the county, including fees for waste management services. This Act stipulates that business owners in Taita Taveta County shall pay an annual license of Kshs. 300 and this fee is inclusive of waste collection services. This is the only local legislation that mentions MSW in the county.

### 1.3.2 Occupational, Health and Safety Act 2007

The purpose of this Act is to secure the safety, health and welfare of all persons at work by protecting them from risks to safety and health arising out of the work environment and activities. The Act stipulates that all employers shall be responsible for the training and provision of safety equipment or facilities to employees at any work place. Under this act, county shall:

- Provide PPE to street cleaners, waste collectors and employees working at the disposal facilities
- Ensure safety measure are in place for their waste collectors and street cleaners

### 1.3.3 Public Health Act 242

Under this Act, counties shall:

- Penalize/give fine to individuals and entities committing illegal dumping,
- Be accountable for not providing sound MSWM services
- Ensure medical institutions safely treat and dispose their medical and hazardous waste

### 1.3.4 Regulation on Licensing in Taita Taveta County.

In order to obtain a license for the provision of waste services such as collection, an individual or entity must first fill up application forms at the Department of social services and pay application fees. This Department thereafter provides the applicant with a certificate of registration. Once a certificate of registration is issued, the Department of Water, Sanitation, Environment, Climate Change & Natural Resources provides guidelines on all the requirements to be fulfilled while NEMA provides the license for collection.

## 1.4 Waste Audit through SDG indicator 11.6.1 Baseline

Understanding the current status of MSWM with key parameters is an important step for the successful planning of sustainable MSWM system. Using UN-Habitat’s *Waste Wise Cities Tool: Step by Step Guide to Assess City Municipal Solid Waste Management* *Performance through SDG 11.6.1 Indicator Monitoring*, the amount of MSW generated, collected and managed in controlled facilities were quantified in Taita Taveta. The survey took place in May 2022.

### 1.4.1 Waste Audit results and Waste Generation future projection

Out of 195 tonnes per day of MSW generation, only 30% is collected and 1% of it is managed in controlled facilities. 70% of the MSW remained uncollected and polluting environment through open burning, becoming plastic debris in water systems. 136 tonnes of MSW is left in the environment daily. If the status quo is maintained, there will be approximately 162 tonnes of MSW entering the environment every day by 2032, hence there is a need for strategic measures to improve collection coverage. to prevent environmental pollution. Considering that about 57% of all the waste ending up at these disposal facilities is organic, very high emissions of GHG occur, particularly methane which is generated when organic waste is left to decompose in dumpsites and contributes to global warming and climate change. This strategy underscores the absolute importance of improving the status of the official disposal sites in Taita Taveta County. Figure 4 presents the summary of the waste flow in Taita Taveta County.

There are two official disposal sites in Taita Taveta County and both are operating as open dumpsites with no measures



### 1.4.2 Waste Composition and summary of material flows

Waste composition is a critical consideration in development of a SWM strategy as it provides an overview of types of waste generated and enables the evaluation and prioritization of waste recovery measures which aligns with the waste hierarchy and circular economy. The composition analysis was determined during the waste audit and the results are as presented in Figure 5.

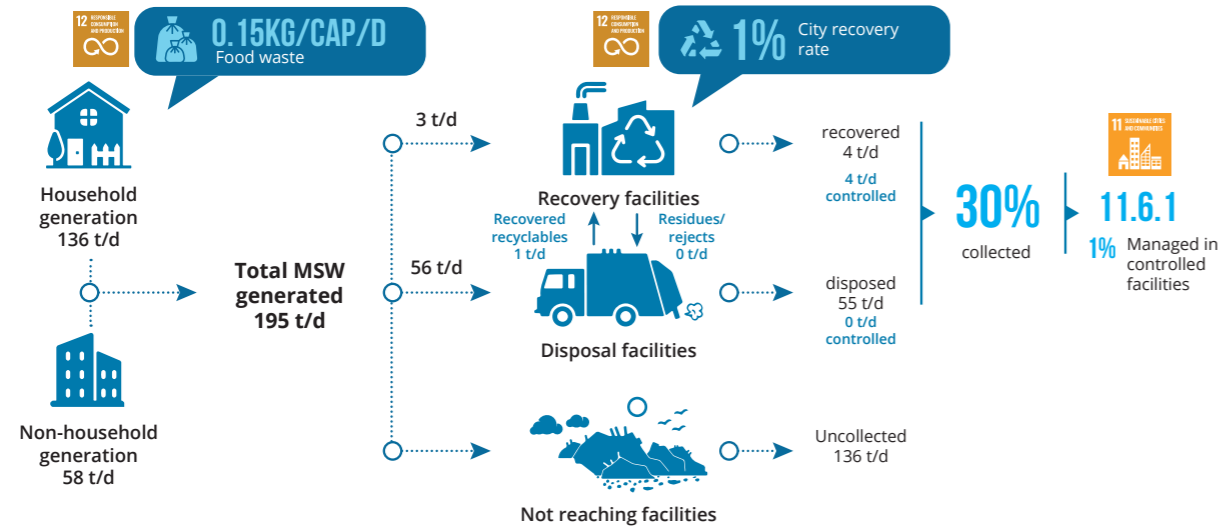


Figure 4: WaCT flow chart results in Taita Taveta

Population and waste generation projections are important to help with the long-term planning of infrastructural and resources needed. According to the Kenya National Bureau of Statistics (KNBS), the national population census of 2019 indicated that Taita Taveta County had 340,671 inhabitants. This population has been growing at an annual rate of 1.8% and is projected to have risen to 359,400 in 2022 and will continue to rise to 429,592 by 2032.

The waste audit indicated that the per capita waste generation in Taita Taveta County in 2022 is 0.54 kg/day resulting in a total

of 195 tonnes/day of MSW. Assuming this waste generation rate is maintained and with the projected population, Taita County will generate approximately 212 tonnes/day and 232 tonnes/day of MSW by 2027 and 2032 respectively.

Table 1 presents a summary of the population and waste generation projection in each sub-county until the year 2032.

Table 1: Taita Taveta County Waste Generation Projection Based on Population Growth

	2022		2027		2032	
	Population	waste generated (t/day)	Population	waste generated (t/day)	Population	waste generated (t/day)
Voi	118,602	64	129,668	70	141,765	77
Mwatate	86,256	47	94,304	51	103,102	56
Wundanyi	57,504	31	62,869	34	68,735	37
Taveta	97,038	53	106,092	57	115,990	63
<b>Total</b>	<b>359,400</b>	<b>195</b>	<b>392,932</b>	<b>212</b>	<b>429,592</b>	<b>232</b>

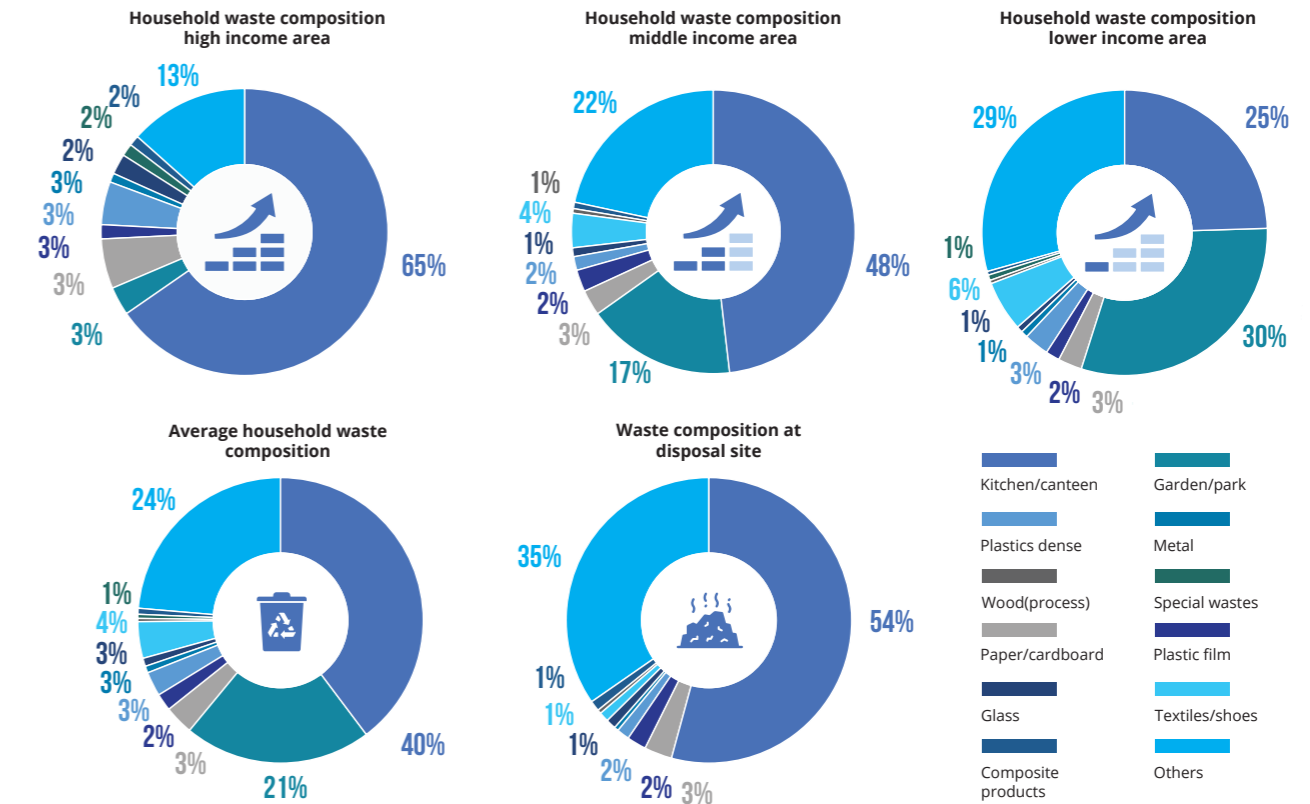


Figure 5: Waste composition at the point of generation and disposal in Taita Taveta County.

The below table summarises the potential amount of recoverable waste in Taita Taveta County showing the total of 126.8t/day, equivalent to 65% of total MSW generation. In order to harness those recyclables (dry waste), clean MRFs with the total capacity of 20t/day could be established for the whole

county. This means each city could have a clean MRF with 5t/day of processing capacity. Organic waste treatment facility (e.g. composting, biogas, black-soldier flies, etc.) of a total capacity of 110t/day is needed to recover the organic waste generated in the county.

Table 2: current VS potential material recovery in Taita Taveta County

Waste category	Quantity collected for recovery (t/d)	Potential by expanding waste collection services (t/d)	Percentage to total MSW generation
Paper and cardboard	0.83	6.6	3%
Plastics	0.75	8.8	5%
Glass	1.2	2.7	1%
Metals	0.1	1.1	1%
Organics	0.3	107.6	55%
<b>Total</b>	<b>3.2</b>	<b>126.8</b>	<b>65%</b>

[https://www.citypopulation.de/en/kenya/admin/coast/06\\_\\_taita\\_taveta/](https://www.citypopulation.de/en/kenya/admin/coast/06__taita_taveta/)

Figure 6 and Figure 7 are diagrams summarizing future waste flows in Taita Taveta county in the short to medium term and long term respectively. They lay out the key policy interventions such as source separation, awareness raising and licensing

and capacity development of CBOs as well as infrastructure investments in sorting facilities and composting, as well as operational improvement of disposal facilities.

Short-Med (1-5 years) term future Waste Flow for Taita Taveta County

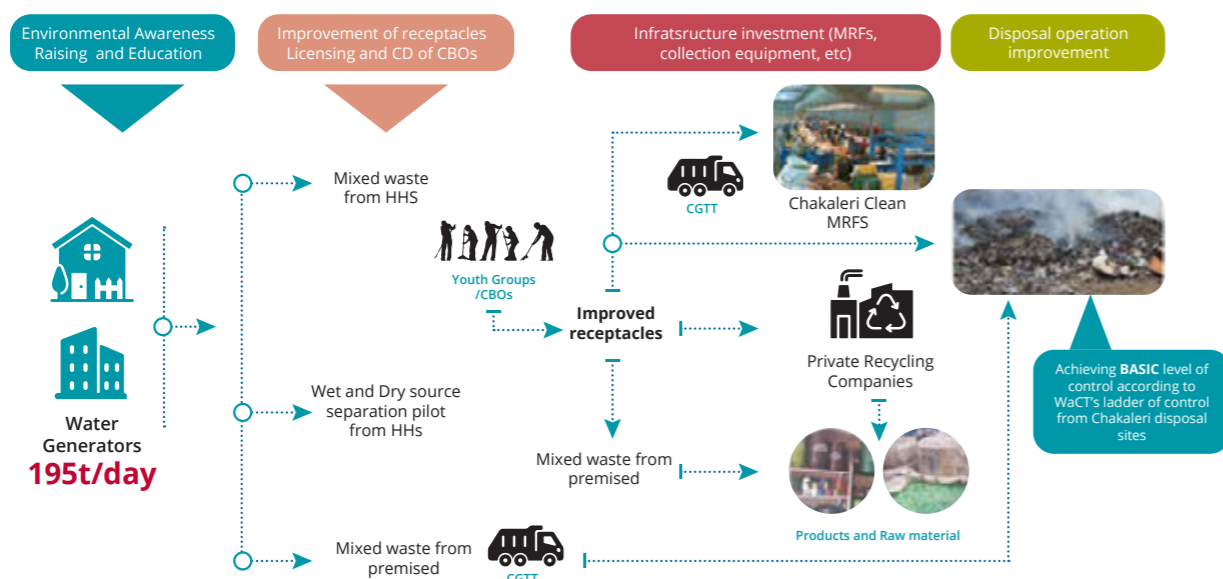


Figure 6: Short-medium term quick-win interventions to improve MSWM in Taita Taveta County

Short-Med (1-5 years) term future Waste Flow for Taita Taveta County

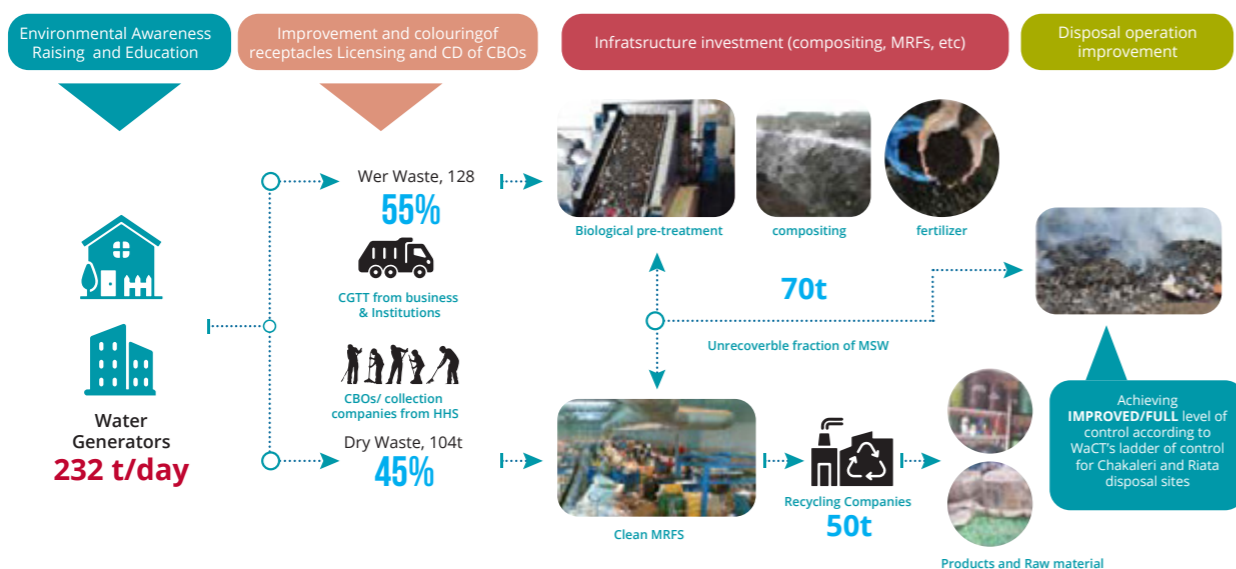


Figure 7: possible future interventions to improve MSWM in Taita Taveta County

## 1.5 Consultations

Consultative workshops with relevant stakeholders were held from 13th -14th Sept 2022, 8th -10th Nov 2022 and on 17 February 2023. Participants included representatives from different departments of County Government of Taita Taveta (Departments of Environment, Climate Change, Revenue, Trade, Public health, Tourism, Forestry and Devolution), ward administrators from all the four sub-counties, a representative from NEMA, representatives of CBOs, youth leaders, religious

leaders, community leaders/village elders and recyclers. These stakeholders provided their inputs and suggestions for the different elements of the waste management system from generation to disposal, which informed the development of this strategy. The below is a summary of the necessary actions suggested by stakeholders in the workshops according to the different MSWM stages.

### Generation:

	Necessary actions
Infrastructure investment	<ul style="list-style-type: none"> <li>Improvement of roads to make them accessible, increasing the number of receptacles and collection vehicles as the current ones are inadequate and in bad conditions</li> <li>Provision of colour coded bins for source separation</li> <li>Identification and registration of waste collection CBOs</li> </ul>
Policy intervention	<ul style="list-style-type: none"> <li>Development and enforcement of source separation regulations</li> <li>Introduction of mandatory payments on waste generators</li> <li>Putting in place proper payment mechanisms for collecting fees for waste management services from generators.</li> </ul>
Data, M&E system	<ul style="list-style-type: none"> <li>Creation of a fully equipped office for waste functions that will track the amounts of waste generated and sorted at source</li> <li>Developing and signing waste collection agreements with waste generators</li> <li>Formation of WhatsApp groups where CBOs and street cleaners can share messages and photos of their respective activities hence enhancing accountability</li> </ul>
Awareness raising	<p><b>Target:</b> Landlords, tenants, schools, traders, (all waste generators), village leaders, CBOs</p> <p><b>Topic:</b> Waste management (collection, segregation, disposal), public health</p>

### Primary collection:

	Necessary actions
Infrastructure investment	<ul style="list-style-type: none"> <li>Provision of relevant collection equipment (Tuktuks, pushcarts, electric bicycles with cart, etc), Tools, PPE and additional receptacles.</li> <li>Provision of signage/posts showing waste generators where and how to store their waste as it awaits primary collection.</li> </ul>
Policy intervention	<ul style="list-style-type: none"> <li>Setting up an easy licensing system for CBOs and youth groups who want to be involved in waste management activities</li> <li>Profiling and registration of informal collectors</li> <li>Introduction of fines for illegal dumping</li> <li>Giving CBOs the mandated to man receptacles</li> <li>Formation of Municipal boards and town committees</li> </ul>
Financial sustainability	<ul style="list-style-type: none"> <li>Implementation of waste collection fees and fines for those who do not pay.</li> </ul>
Data, M&E system	<ul style="list-style-type: none"> <li>Keeping data on number of houses waste is collected from</li> <li>Creation of a fully equipped office for waste data functions</li> </ul>
Capacity development	<p><b>Target:</b> Youths, CBOs, waste generators</p> <p><b>Topic:</b> Proper waste handling from source to disposal, waste segregation, health and safety</p>
Awareness raising	<p><b>Target:</b> Households, collectors, local community, CBOs</p> <p><b>Topic:</b> Proper waste handling and collection, implications of uncontrolled disposal</p>



### Secondary collection:

	Necessary actions
Infrastructure investment	<ul style="list-style-type: none"> <li>Provision of signage/posts showing waste generators/CBOs how to put their waste in the receptacles as it awaits secondary collection</li> <li>Increasing the number of waste collection trucks-each sub-county should have its own vehicle</li> </ul>
Policy intervention	<ul style="list-style-type: none"> <li>Developing and enforcing regulations that require collection vehicles to be serviced at regular intervals.</li> <li>Formation of Municipal boards and town committees</li> </ul>
Financial sustainability	<ul style="list-style-type: none"> <li>Increasing the amount of regular budget allocated for waste collection services</li> <li>Allocation of clear budget lines specifically for fuel and vehicle maintenance.</li> <li>Enaction of the Revenue Administration Bill</li> </ul>
Data, M&E system	<ul style="list-style-type: none"> <li>Developing a checklist/workplan for secondary collection</li> <li>Creation of a fully equipped office for waste data functions</li> </ul>
Capacity development	<p><b>Target:</b> Collectors, CBOs and administration/county staff</p> <p><b>Topic:</b> Collection, transportation, loading, disposal, and safe waste handling</p>
Awareness raising	<p><b>Target:</b> Collectors, MRF Staff, community/informal recyclers, staff working in loading and sorting</p> <p><b>Topic:</b> Collection, transportation and disposal, safety in handling waste and recyclable waste</p>

### Recovery:

	Necessary actions
Infrastructure investment	<ul style="list-style-type: none"> <li>Construction of at least 2 MRFs at central locations in the short term and at least 5 more in the long term to ensure every sub-county has one.</li> </ul>
Policy intervention	<ul style="list-style-type: none"> <li>Establishing standardised criteria for MRFs designs and operation</li> <li>Establishment of EPR regulations</li> <li>Developing regulations that incentivise recyclers such as tax rebates on purchasing recycling equipment, income tax relief for the first 1-2 years of operation, subsidised licensing and registration fees, etc.</li> </ul>
Financial sustainability	<ul style="list-style-type: none"> <li>Enforcement of EPRs regulations that require manufacturers/importers/distributors of certain products to support MRFs in the recycling of waste from the said products.</li> <li>Setting aside a municipal budget to support MRFs operations in the first year of operation.</li> <li>Setting fair and standardised prices for recyclables.</li> </ul>
Data, M&E system	<ul style="list-style-type: none"> <li>Availing of digitised data on generated and recovered waste</li> <li>Installation of operational weigh bridges at recovery facilities</li> </ul>
Capacity development	<p><b>Target:</b> Recyclers, County Staff, CBOs</p> <p><b>Topic:</b> 5Rs, maintenance and Occupational health and safety, operation of MRFs</p>
Awareness raising	<p><b>Target:</b> Generators, handlers/CBOs, community</p> <p><b>Topic:</b> 5Rs, waste handling, markets for recovered materials</p>

### Disposal:

	Necessary actions
Infrastructure investment	<ul style="list-style-type: none"> <li>Improving the existing disposal sites, Chakaleri &amp; Riata, to atleast a basic level of environmental pollution control.</li> <li>Improving the road leading to Riata dumpsite to an all-weather road.</li> <li>Acquiring heavy machinery (bulldozers, excavators and compactors) for operation and maintenance of the disposal facilities.</li> <li>Installing functional weighbridges at each disposal site.</li> </ul>
Policy intervention	<ul style="list-style-type: none"> <li>Defining and enforcing Environmental control standards</li> <li>Developing regulations on illegal disposal</li> <li>Formation of Municipal boards and town committees</li> </ul>
Financial sustainability	<ul style="list-style-type: none"> <li>Enactment of the Revenue Administration Bill that will ensure financial resources are available for the operation &amp; maintenance of disposal sites.</li> <li>Implementation of waste collection fees and fines for those who do not pay</li> </ul>
Data, M&E system	<ul style="list-style-type: none"> <li>Installing functional weighbridges at each disposal site.</li> </ul>
Capacity development	<p><b>Target:</b> County staff, public, CBOs</p> <p><b>Topic:</b> Proper handling and disposal of waste, effective disposal techniques</p>
Awareness raising	<p><b>Target:</b> County Staff, public, CBOs</p> <p><b>Topic:</b> Proper handling and disposal of waste, effective disposal techniques, risks associated with various types of wastes</p>







— CHAPTER —

# 02

## Strategy



Based on the Waste Audit and consultation workshop, a MSWM Strategy was developed. The strategy will provide a practical guidance for Taita Taveta county to deliver sustainable MSWM service that provides basic access to waste collection services to all, promote circular blue economy through waste

recovery efforts and protect environment from pollution through minimizing mismanaged waste. The strategy consists of seven components to cover actions to be carried out in all the MSWM chain with necessary financial instruments and awareness raising activities for behavioural change.

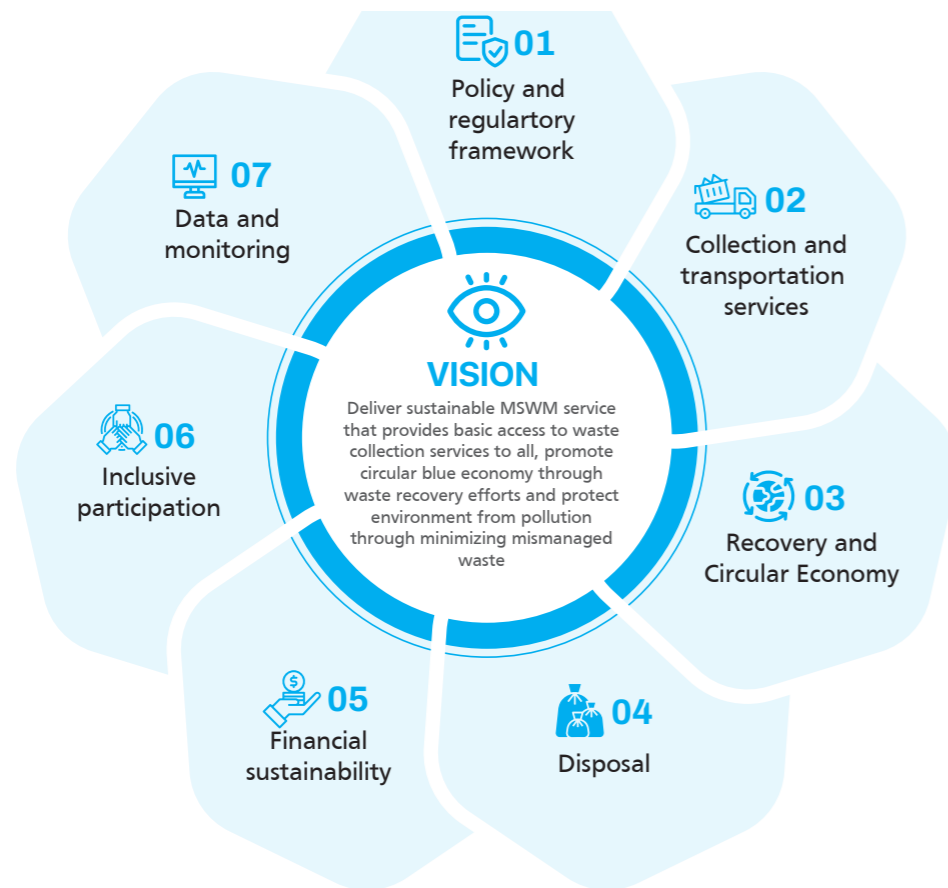


Figure 8: Strategy Components

Implementation of this strategy will be driven by the following principles:

- 1 Mandatory payment for the full cost of solid waste management services by the waste generators who can afford i.e., middle- and high-income households and business premises & institutions. Application of subsidised fees for low-income households.
- 2 Protecting public health, the quality of the environment and mitigating climate change and plastic pollution through reliable services.
- 3 Educating the public on solid waste reduction at source, payment of waste collection services and responsible disposal.
- 4 Providing fair and quality waste management services, in particular collection services to low-income population.
- 5 Recognition by the County government of the contribution the formal and informal stakeholders, especially those in recovery sector
- 6 Acquisition and sustainably operation and maintenance of essential waste infrastructures
- 7 Involving the private sector not only in recovery, but throughout the MSWM services chain
- 8 Promoting circular economy

This strategy sets the following targets against which progress will be measured and monitored:

- 1 Component 1 on policy and legal framework:
  - Developing policy, regulations, laws and by-laws for SWM in Taita Taveta County by 2024
  - Reviewing the county Finance Act 2017 by 2023 in order to update the correct cost of waste collection
  - Ensuring that town management committees and municipal boards are operationalised by 2023.
- 2 Component 2 on collection and transportation:
  - Collecting 50% and 80% of MSW generated in Taita Taveta County by 2025 and 2032 respectively
  - Creating at least 500 sustainable jobs in waste collection by 2025, through formalisation/registration of waste collection CBOs/groups.
- 3 Component 3 on recovery and circular economy:
  - Creating at least 500 sustainable jobs in the recovery value chain by 2025, benefitting especially women and youths.
  - Improving recovery rate from the current 1% to at least 20% by 2025 and 50% by 2032.
  - Piloting waste sorting by provision of at least 2 waste receptacles with colour-coded compartments for wet and dry by 2024 and full source separation by 2032.
- 4 Component 4 on Disposal:
  - Relocating Chakaleri dumpsite in 2023 and improving the status of Riata to at least to a basic level of control by 2025.
  - Transitioning both disposal sites to a sanitary engineered landfill by 2032.
  - Closing/reclaiming all non-designated disposal sites by 2025.
- 5 Component 5 on Financial sustainability:
  - Increasing the annual budget allocation for MSWM, currently at KES 3 million, by at least 50% by 2025.
  - Paying for waste collection services by at least 50% of the population by 2025 and 100% by 2032.
  - Developing proposals for prioritized infrastructural investment by 2025.
- 6 Component 6 on inclusive participation:
  - Including CBOs in waste collection services by 2024.
  - Conducting at least 4 community education and awareness activities annually for all by 2024.
  - Reducing per capita plastic waste emissions to the environment by 50% by 2032.
- 7 Component 7 on data and monitoring:
  - Installing weighbridges with data monitoring personnel and necessary equipment at Chakaleri and Riata dumpsites by 2023-2024.
  - Putting in place a fully functional data monitoring platform with up-to-date information on SWM by 2024

Based on Waste Wise Cities Tool's Ladder of control level for landfill sites, available at <https://unhabitat.org/sites/default/files/2021-10/Waste%20wise%20cities%20tool%20-%20EN%2013.pdf>





## 2.1 Component 1: Policy and regulatory framework

### Overview

The management of MSW in Taita Taveta County is centrally governed by the Department of Water, Sanitation, Environment, Climate Change & Natural Resources. The harmonized governance structure provides an easy framework for the development of a policy and regulations that will steer the management of MSW in the desired direction.

Currently, mismanaged MSW ranging from low collection coverage to uncontrolled disposal is a public health risk to the residents and the natural environment of Taita Taveta County. Therefore, an enforceable legal and policy framework with

regulations covering the investment in waste collection, recovery and disposal infrastructure; adequate and regular budget for operation & maintenance and public & private participation and inclusion is needed.

According to the National Sustainable SWM Strategy of 2019, every county is required to ensure that its waste management enforcement and inspection regime is robust and well resourced. Under this component 1, below elements for necessary policy and regulatory measures are proposed based on the outcomes of the recently conducted waste audit (May 2022) and following local waste chain stakeholders' workshops.

Table 3: Policy and regulatory frameworks

<b>Department of Water, Sanitation, Environment, Climate Change &amp; Natural Resources</b>	As the local authority in charge of SWM in the county, the Department will: <ul style="list-style-type: none"> <li>• Ensure that this strategy is embedded in the 5year County Integrated Development Plan (CIDP) and implemented across the four sub-counties</li> <li>• Ensure there is adequate qualified staff and resources to dispense SWM functions</li> <li>• Spearhead the development of a SWM policy, bill and other laws and by-laws for Taita Taveta County.</li> <li>• Strategise on how to collaborate with local universities and colleges especially in the area of technology and innovations around efficient solid waste management.</li> </ul>
<b>Municipalities and Town Committees.</b>	Municipal boards and Town committees once operationalised, will be responsible for street sweeping and drain cleaning activities.
<b>Ward administrators</b>	Ward administrators will form Ward Development Committees (WDCs). These committees will consolidate village plans and budgets to address the solid waste problems in all the villages. WDCs will report to the County Director of Environment.
<b>National Ministries Departments and Agencies</b>	The strategy will further be implemented under the guidance and support from the following national and county ministries & agencies; <ol style="list-style-type: none"> <li>1. Ministry of Environment and Forestry</li> <li>2. Ministry of Water and Sanitation</li> <li>3. The National Treasury and planning,</li> <li>4. County Finance and Planning Department</li> <li>5. Ministry of Labour and Social protection</li> <li>6. County Department of Health Services</li> <li>7. Ministry of Interior</li> <li>8. National Environment Management Authority,</li> <li>9. County Environmental Committee</li> <li>10. County department of public works and infrastructure</li> <li>11. County Directorate of enforcement</li> <li>12. County Dept of youth, sports, gender, culture and social services</li> <li>13. Council of Governors</li> <li>14. County Assembly</li> <li>15. Town Committees and Municipalities</li> </ol>

<b>Local ordinances</b>	Local By-laws will be introduced to govern waste generators, collectors, recyclers and managers. Such by-laws for each player will include but not limited to: <ul style="list-style-type: none"> <li>• Generators: paying for services, attending community awareness campaigns, participation in clean-up activities and conducting source separation.</li> <li>• Collectors: must be registered, and ensuring quality and timely services</li> <li>• Recyclers: registered, belonging to an association and maintaining fair market prices for recyclables.</li> <li>• Managers: introducing and testing mechanisms for payment of fees for waste collection services at sub-county level, introducing penalties on littering and illegal dumping, open burning of waste, and enforcing requirements for registration and licensing of waste management operators.</li> </ul>
<b>Enforcement</b>	The County Government will ensure that there are relevant personnel/enforcement authorities to oversee the enforcement of the set local ordinances. Environment enforcement officers, currently with limited powers to arrest but not prosecute, will be responsible for arresting culprits and filing charge sheets then handing over to the county public prosecutor to take the case to court.







## 2.2 Component 2: Collection and Transportation Services

The current waste collection operation model in Taita Taveta County does not incorporate door to door or primary collection for households or premises and stipulates that all waste generators are responsible for transporting their waste to the nearby receptacles for secondary collection. However, these receptacles are not sufficient to serve the whole population and majority of the residents walk more than 500 meters to access them. In addition, there is neither collection fee payment nor private sector involvement. This model of operation has proven to be insufficient as it only results in a collection coverage rate of 30%.

An integrated operator model which incorporates private actors to take charge of the primary collection whilst the County Government manages secondary collection is prioritized in this Strategy. The Strategy envisions that the most efficient way to incorporate private actors is to register CBOs and other groups or individuals currently engaged in informal waste collection activities in the county. These CBOs will have collection service contracts with the County Government to

provide primary collection services. They will not transport waste to the disposal sites but deliver it at the receptacles for secondary collection by the County Government. This means that the cost of investing in primary collection infrastructure is feasible and practical since these groups will use low-cost transportation equipment, such as pushcarts.

Critical to the sustainability of this operation model and any other model is cost recovery. Therefore, the County Government will put measures in place to ensure waste generators pay for collection services and those with inability to pay are subsidized based by establishing fees based on ability to pay and waste generated. More details on cost recovery options are presented under the component of financial sustainability. This Strategy aims at ensuring that all residents of Taita Taveta County, including those categorized as low-income, have access to a basic waste collection service.

Table 4: Collection Services Measures

<p><b>Primary Collection Services</b></p>	<p>Low collection coverage is mainly due to the fact that generators have to take their waste to collection points but majority, either due to distance to these points or just laziness, opt to dump in nearby drains and open spaces. Removing this liberty and replacing it with door-to-door collection by a service provider will ensure that majority of the waste reaches the receptacles.</p> <p>The County Government will map out youth and women groups/CBOs (including persons with disability) that will be responsible for the door-to-door collection. While the County Government will be responsible for training the CBOs and provision of the necessary initial waste collection equipment and PPE, the CBOs will be responsible for maintaining the said equipment and acquiring more in the long-term. These CBOs will be stationed in strategic locations in the four sub-counties and will serve all households.</p> <p>Primary collection services for commercial and institutional premises will be provided by the County Government.</p>
<p><b>Secondary Collection Services</b></p>	<p>Taita Taveta County government will continue to provide secondary collection services i.e., collecting household waste from receptacles but with increased collection frequency and more loaders because there will be more waste received by the receptacles.</p>

<p><b>Waste collection infrastructure</b></p>	<p>For primary collection, an investment in low-cost well designed and covered pushcarts, as well as electric bicycles with cart or tricycles dicycles (Tritolis), is required. For locations that are inaccessible even by wheelbarrows, CBOs would have the liberty to carry the waste by hand to the receptacles not further than 200 meters.</p> <p>For secondary collection, additional vehicles and personnel will be essential for efficient collection service. Each sub-county should have their own vehicles and fully serviced. In particular, acquisition of a new collection truck a capacity of at least 10 tonnes for Taveta sub-county and servicing the existing one must be prioritised.</p> <p>Both vehicles and handcarts must be covered to minimise leakage of waste into the environment during transportation</p> <p>In the short-medium term, receptacles will be upgraded with gates installed so as to properly contain the waste and minimise spillage. though the long-term plan is to do away with the receptacles there is still need to provide additional receptacles to ease congestion on the existing ones and to ensure they are all at acceptable distances- not more than 300 meters- from each residential zone. This will ensure primary collectors can also access with ease. Should there be need for any business premise/institution to use receptacles, then they shall have separate designated receptacles from those servicing the households.</p> <p>In the long term, the county will do away with receptacles and either introduce skips and skip loaders or CBOs/private collection companies will be in a position to directly transport the waste from the source to either MRFs or disposal sites.</p> <p>The design capacity of all waste collection infrastructure will take into account the projected waste quantities for the next 10 years.</p>
<p><b>Initial investment in waste infrastructure for primary collection</b></p>	<p>Initial capital to purchase pushcarts, increased number of receptacles and PPEs cannot be obtained from cost recovery alone. County government will perform a municipal budget diagnostic to find such funds and support the CBOs in acquiring them.</p>
<p><b>Corporate Social Responsibility (CSR)</b></p>	<p>Waste collection bins shall be installed in the vicinity of business premises by the owners of the said businesses as part of their CSR initiatives. This waste will be collected by the County Government. The Public Health Act mandates businesses to keep their business vicinity clean otherwise they are liable for a fine.</p>
<p><b>Transit waste</b></p>	<p>Taita Taveta being a transit county for travellers to and from Mombasa, there tends to be significant waste dumped illegally by passengers in public vehicles as they stop over at nearby open fields to ease themselves from the call of nature. County by-laws shall be formulated to ensure drivers of such public vehicles only stop at designated points where business owners have set up waste collection bins. Failure to comply, the drivers/ bus companies would pay a fine.</p>
<p><b>Obsolete waste</b></p>	<p>According to the National sustainable SWM policy 2019, regulations and guidelines on how handle obsolete wastes (E-waste, tyres, used oils, asbestos, etc.) are currently under development or approval. Once completed and adopted, the County Government will follow them to deal with this type of waste.</p>
<p><b>E-waste</b></p>	<p>E-waste was specifically cited as a menace in the county and although regulations and guidelines on how handle this type of waste isn't available yet, the county could adopt temporary strategic measures to safely manage it. In this regard, the county will set up strategic locations where citizens can drop off their e-waste. Noting that there are a couple of e-waste recycling initiatives in Mombasa and Nairobi, the county could enter into partnership with them to collect and recycle this type of waste.</p>
<p><b>Street sweeping and drain cleaning</b></p>	<p>Street sweeping and drain clean up shall remain the responsibility of the County government-especially the town committees and municipalities when they will become functional. However, the services will be extended to cover the hotspots of pollution beyond the CBDs. Personnel responsible for street sweeping and drain cleaning will not double up as loaders to minimise staff being overworked.</p>

<b>Integrated Collection Services framework</b>	<p>Collection service contracts between Taita Taveta County government and CBOs will be provided and signed by both parties. The service contracts will stipulate designated areas for operation for each CBO, frequency of collection among other terms of service.</p> <p>The formation of an association of CBOs in Taita Taveta County is encouraged to act as an umbrella body to govern and represent their interests.</p>
<b>Frequency of collection Services</b>	<p>Each household, institution and premise will receive a primary collection service at least two times per week:</p> <ul style="list-style-type: none"> <li>For households, the CBOs will work at least 6 days per week to be able to rotate to different households efficiently within their areas of jurisdiction. The said jurisdictions will be marked into zones and a collection timetable corresponding to the stipulated weekly collection frequency for each zone will be adopted. Considering that the number and capacity of receptacles is limited and cannot contain waste for long periods of time, secondary collection services will be provided 6 times per week in Voi and Taveta sub-counties. However, in Wundanyi and Mwatate sub-counties, this will be done 3 &amp; 5 times per week respectively.</li> <li>For business premises and institutions, the County Government will provide primary collection services at least 3 times per week.</li> </ul>
<b>Performance Specifications and monitoring</b>	<p>Performance specifications to be incorporated within collection service contracts will be specified to place responsibility on the CBOs for ensuring their areas of jurisdiction are kept clean, especially the areas in the vicinity of the receptacles. In addition, should any illegal dumping sites emerge within the areas of assignment of the CBOs, it would be their responsibility to clear them and map out those disposing waste illegally and ensure they are also serviced. The performance of the CBOs will be monitored regularly by environment officers stationed in each sub-county/ward.</p>
<b>Cost recovery</b>	<p>In order to achieve and ensure the basic service performance standards, Taita Taveta County government will have to test and adopt new systems for revenue collection and disbursement not only under the framework of service contracts but also in sustaining secondary collection services and collection infrastructure.</p> <p>Revenue collection from premises and institutions is the most feasible since the County finance Act 2017 requires them to pay for business licenses and the Act also mentions that the license includes waste collection though the funds are insufficient and never trickle down to support any waste management operations. This Act will be reviewed to reflect the actual cost of waste collection per size of business entity and finance department, through the formation of a Finance Bill, will be put to task to channel it in the right docket.</p> <p>The amount of revenues to be collected from households, including those in the low-income category, will be determined by the County Government. Middle- and high-income households will be charged a fee that includes a subsidy for low-income households. This money will be collected directly by the CBOs. County Government will develop by-laws and provide enforcement support to the CBOs to ensure every household pays for the service.</p>
<b>Occupational Health and Safety</b>	<p>All waste collectors (loaders and CBOs) will have full PPE at all times and will be well trained in health and safety and refresher training semi-annually:</p> <ul style="list-style-type: none"> <li>For CBOs, they will be trained by the county government but they will be responsible for providing their own PPE.</li> <li>For loaders, it is the responsibility of employer - in this case, the County government- in accordance with the Occupations Health and Safety Act, 2007.</li> </ul> <p>In addition, all the waste collectors will also be required to have relevant vaccines such as against tetanus to caution against accidental pricks. The proof will be a vaccination card with a list of vaccines administered for each collector</p>



## 2.3 Component 3: Recovery and promotion of circular economy

Material recovery is a crucial component of the waste management value chain. In particular, the application of the 5Rs (Rethink, Refuse, Reduce, Reuse, Recycle) is essential for the protection of public health, reduction and prevention of environmental pollution and GHG emissions, and promoting a circular economy. Those circular economy principles create employment, especially for youth and women in the formal and informal sectors of the waste value chain.

In Taita Taveta County, waste materials such as plastics, paper, metals, glass and organics (bones) are currently being recovered

and exported to other counties by formal and informal recyclers. However, these efforts only result in a recovery rate of 1%, despite 70% of the waste generated being recoverable. There is huge potential to increase the waste recovery rates of the materials and this strategy focuses on unlocking this potential.

Strategic measures to boost recovery and promote a circular economy in the county will not only require investment in recovery infrastructure but also integration, acknowledgement and incentivization of the formal and informal actors under a legal local framework.

Table 5: Recovery & circular economy Measures

<b>Material Recovery Facilities (MRFs) and infrastructure</b>	<p>A clean (receiving mixed dry recyclables/waste only) MRF of 30 tonnes per day capacity is currently under construction at Chakaleri dumpsite. In addition to the MRF at Chakaleri dumpsite currently under construction, at least 3 more small scale MRFs with daily processing capacity of 5 tonnes/day will be built in Voi, Wundanyi and Taveta sub-counties. However, the first priority will be given to Taveta sub-county which is detached from the other 3 because of its distance, at least 100 kms away. These would be clean MRFs. The MRFs will be fitted with relevant machines and equipment operated by trained personnel to upcycle resources and facilitate the recovery process.</p> <p>These MRFs will be open to receiving dry recoverable materials i.e., plastics, paper/cardboard, glass and metals from anyone who aggregates the minimum amount set.</p>
<b>Material Recovery facilities standards</b>	<p>The design of the MRFs will be based on international best practises/requirements: since there are no national standards for building a MRF, UN-Habitat WaCT can provide standards (Ladder of control presented in Annex 1), including:</p> <ol style="list-style-type: none"> <li>Registered/licensed facility</li> <li>Site boundary and supervised access control 24/7</li> <li>Environmental pollution control compliant to applicable environmental standards</li> <li>Extracted materials delivered into recycling/recovery markets</li> <li>Residues managed in accordance with applicable environmental standards</li> <li>Fire prevention and control measures in place</li> <li>Environmental Health and Safety (EHS) measures implemented in accordance with professional risk assessment and operating plan</li> <li>Showring and sanitary facilities</li> <li>Staffed with professionally qualified personnel</li> <li>Incoming and outgoing materials weighed and recorded in a register</li> </ol>
<b>Recovery facilities and operations</b>	<p>It is encouraged that the MRFs shall be clean i.e., receiving dry mixed waste only. This will ease the cost of investment as well as ease operations. The current setup of recovery activities in Taita Taveta county makes this approach of MRF operation feasible. Waste pickers, individuals and middlemen currently collecting dry recyclables can sell them at these MRFs.</p>



<b>Organic waste management</b>	<p>Management of organic waste through composting or any other biological process shall be a long-term strategic plan and shall be implemented alongside source separation after a feasibility study as stipulated in the national sustainable policy for SWM. The feasibility study should not only identify potential sites for setting up composting plants and financial requirements of setting up composting technology in the county but also establish clear procedures for providing incentives to encourage private sector participation in composting ventures based on viable business model.</p> <p>Awareness campaign and sensitization activities aimed at promoting home composting and reuse of organic waste to feed animals, shall be organized and regularly carried out by the County Government.</p>
<b>Recovery stakeholders</b>	<p>Majority of the current recovery stakeholders are informal and unrecognised. Formalising and encouraging their efforts at the same time ensuring that decent job standards are provided, will be essential in boosting the recovery sector in Taita Taveta County. They will be mapped out and registered as recyclers, with the provision of key social protection scheme (e.g., National Health Insurance Fund (NHIF) and pension scheme) by county government. Operation of infrastructure such as MRFs will be done by registered recyclers, which can enable them to enhance their income.</p> <p>Existing formal recovery stakeholders will be incentivized to keep up with the recovery activities and data recordings, whilst exploring measures to add value to the raw products locally. County government will explore the possibility of mandating the formal recovery stakeholders to buy from county-registered recyclers (former waste pickers) through by-laws, to ensure inclusivity.</p> <p>The formation of an association of waste recyclers of Taita Taveta County is encouraged to act as an umbrella body to govern and represent their interests.</p>
<b>Incentives</b>	<p>Incentives such as free registration for informal recyclers, regulated market prices (through the association of waste recyclers) and tax incentives such as rebates when acquiring machinery for recovery will be explored under a legal framework in consultation with the relevant national ministries and NEMA.</p>
<b>Extended Producer Responsibility (EPR)</b>	<p>Local producers, importers and manufacturers will be responsible for their products in the markets. They will be required to either support the MRFs (in-kind or cash) to recycle their products or subsidise collection fees for low-income households in zones where their products are mostly consumed.</p>
<b>Recovery regulations</b>	<p>Minimum personal and environmental protection measures will be put in place under local ordinances. All recovery individuals, organisations shall belong to a Recovery Association to be formed.</p>
<b>Environmental Monitoring and Control</b>	<p>Environmental monitoring and control will be ensured at each recovery facility in accordance with NEMA requirements. Environment officers will perform impromptu visits to the MRFs to ensure compliance with the Public Health Act 242.</p>
<b>Occupational health and safety.</b>	<p>All recyclers will have full PPE at all times and will be well trained health and safety and refresher training annually. This is the responsibility of employer - in this case, the County government and owners of other private MRFs- in accordance to the Occupations Health and Safety Act, 2007.</p> <p>In addition, all the waste recyclers will also be required to have relevant vaccines such as against tetanus to caution against accidental pricks. The proof will be a vaccination card with a list of vaccines administered for each collector</p>



## 2.4 Component 4: Disposal

The two designated disposal sites - Chakaleri and Riata - are operating without any measure of environmental pollution control. They receive approximately 38 and 18 tonnes per day of MSW respectively. Considering that about 57% of this waste is organic and that there is neither compaction nor covering of waste at the disposal sites, GHG are emitted, particularly methane, which was witnessed by the frequent and spontaneous eruption of fires at both disposal sites. Methane gas has 21 times more effect on global warming than carbon dioxide by weight.

In general, disposal of any type of waste is the least preferred option in the waste management hierarchy. However, due to lack of resources and capacity to adequately implement the 5Rs, it is the preferred option for many low- and middle-income

economies including Taita Taveta County. As the county works towards boosting its 5Rs and especially the long-term plan of diverting organic waste from landfills, this strategy envisions that the current status of the dumpsites, relocated or not, will immediately be improved to a basic level of environmental pollution control in accordance to the UN-Habitat WaCT guidelines. There is a plan to relocate Chakaleri and measures must be taken to ensure that the new site is not operated as an open dumpsite.

This will be achieved by ensuring investment in landfill machinery, equipment and facilities as well as adequate budget for recurrent costs. Strategic options of sources of funds are presented under component 5 on financial sustainability.

*Table 6: Disposal Measures*

<b>Short-term Improvement of existing disposal (Basic control)</b>	<p>The Chakaleri/new site and Riata disposal sites will be, in the short-term, upgraded to meet the basic minimum standards of environmental pollution control as stipulated in the National Solid Waste Management Strategy 2015 by NEMA. Operations will meet basic landfill standards according to the UN-Habitat WaCT's ladder of control (Annex 1). The priority actions here include:</p> <ol style="list-style-type: none"> <li>1. Boundary and access control</li> <li>2. Renting heavy mechanical equipment for compaction</li> <li>3. Covering of waste at least once per week to prevent spontaneous fires</li> </ol> <p>Additional standards include ensuring and maintaining:</p> <ol style="list-style-type: none"> <li>1. Perimeter drainage</li> <li>2. Stable landfill slopes</li> <li>3. Leachate control</li> <li>4. Waste deposition in specific operational areas</li> <li>5. Purchasing of heavy mechanical equipment.</li> <li>6. Zero burning of waste on site</li> <li>7. Staffing during operational hours</li> <li>8. Functional weighbridge in use or recording system in place</li> <li>9. Toilets, bathrooms and hand washing stations</li> <li>10. Use of basic personal protective equipment</li> <li>11. Site drawing showing the landfill boundary and filling area</li> <li>12. Fire response plan in place</li> <li>13. Standard Operating Procedures (SOPs) in place</li> </ol>
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<b>Long-term status of existing and new disposal sites(Full control)</b>	<p>In the long-term, existing and any new disposal facilities shall comply with all applicable Kenyan Laws and regulations (such as the National Solid Waste Management Strategy 2015 and the National sustainable SWM policy 2019), and be aligned with World Bank Guidelines and International Finance Corporation Performance Standards of operations. Operations will meet full landfill standards of control according to the UN-Habitat WaCT. This includes ensuring and maintaining:</p> <ol style="list-style-type: none"> <li>1. Site boundary and supervised access control 24/7</li> <li>2. Site engineering to prevent surface and groundwater ingress</li> <li>3. Leachate containment and treatment</li> <li>4. Stable slopes and erosion control</li> <li>5. Placement of waste in defined cells</li> <li>6. Layering and compaction of waste</li> <li>7. Use of daily and intermediate cover</li> <li>8. Zero burning of waste on site</li> <li>9. Landfill gas control and utilisation</li> <li>10. Control of permitted waste on site</li> <li>11. Professional staffing</li> <li>12. Functional weighbridge in use recording waste quantities and types</li> <li>13. Comprehensive environment, health and safety measures</li> <li>14. Showering and sanitary facilities</li> <li>15. Environmental monitoring</li> <li>16. Site development and operational filling plan</li> <li>17. Post-closure plan</li> <li>18. Fire extinguisher</li> </ol>
<b>Transitioning from open dumpsites to sanitary engineered landfills</b>	<p>According to the National Sustainable SWM policy 2019, each county is required to;</p> <ol style="list-style-type: none"> <li>1. Develop a 3 years plan to transit from the current dumpsites and adopt landfilling for residual waste.</li> <li>2. Develop regulations and levying structure to promote the closure of open dumpsites and establish engineered landfills for disposal of non-recoverable fractions of wastes only.</li> </ol> <p>The county government of Taita Taveta shall strive to comply with these within the next 10 years.</p>
<b>Non-designated disposal sites</b>	<p>All non-designated disposal sites will be cleared and either signs prohibiting illegal dumping or receptacles installed in their place. Enforcement officers will be deployed areas prone to illegal dumping.</p> <p>Unattended plots also tend to act dumping sites for residents. By-laws will be formulated to ensure that the plots are kept clean by the owners.</p>
<b>Strategic interventions unique to Riata disposal site in Taveta sub-county</b>	<p>This facility is located on a sloped area that is prone to flooding in the rainy season. The preference would be to relocate it, but the county government has informed that that is not possible. Therefore, whilst implementing the standards of a sanitary landfill in the long-term, areas with less depression will be selected for cells and drainage channels within the site will be installed for stormwater management. The runoff will be directed into channels that are capable of carrying most storm water without overflowing or flooding adjacent areas.</p> <p>Accessing the site with trucks is also impossible during the rainy season. An all-weather road from main road to the site should be planned for in the long-term.</p> <p>There are also some soil and stone mining activities going on at the site leaving most of the area with deep depressions and narrowing of the access road resulting in accidents of waste collection trucks. Since the County Government is responsible for these activities, it will ensure these activities are controlled to minimise the damage in the short term and in the long term and identify alternative mining sites through consultations with NEMA.</p>



## 2.5 Component 5: Financial Sustainability

Adequate, reliable and sustainable financial resources are key to a sustainable SWM system in any city. In Taita Taveta County, there is no cost recovery mechanisms in place and the only budget available is for fueling vehicles but even this is not reliable as at times, waste collection is delayed due to lack of fuel. This means that there is no regular budget to cater for operation and maintenance, therefore, vehicles are rarely serviced, and should there be a breakdown, repairs will take up to a month resulting in waste not being collected.

When it comes to investment in SWM infrastructure, the county receives an annual budget from the national government and less than 1% of that budget is allocated to pre-determined SWM infrastructural development such as the ongoing construction of the recovery facility at Chakaleri dumpsite. This budgeting is inadequate and strategic measures to increase it should be explored and adopted.

Capital investment and operation and maintenance budgets are critical in improving the current status of SWM in Taita Taveta County. While capital investment could come from various sources such as the national government, county government, international development partners, and the private sector, the operation and maintenance budget should come from revenue collection and other cost recovery measures put in place under a legal framework.

It is recommended to establish a viable business model through feasibility studies for the capital expenditures to realize investments (e.g., collection vehicles and subsidies to CBOs to improve waste collection rate, investments in MRFs, upgrading disposal facilities, etc.). Possible strategies and revenue sources for MSWM is stated below.

*Table 7: Financial Sustainability Measures*

<b>Cost accounting and coverage of the available budget</b>	<p>The chief officer in the Department of Water, Sanitation, Environment, Climate Change &amp; Natural Resources shall develop a budget which accurately reflects the full costs of providing SWM service. This cost will be logically distributed to waste generators particularly business premises and institutions as well as middle- and high-income households. The bigger the size of a business premise/institution, the more they pay and a flat rate collection fee will be set for middle- and high-income households. In the short-term, low-income households can be charged a highly subsidised cost.</p> <p>The existing regular budget for SWM can be adjusted to include a subsidy of collection costs for low-income households. Additionally, fees charged to business premises/ institutions and middle- and high-income households should be set in such a way that it allows for cross-subsidy for low-income households. The strategic objective here is to ensure that, in the short-term, low-income households, who form the majority of the population, are not left behind in receiving regular collection services but income to support services in these areas are secured too. The long-term target is that eventually, this category of households will also pay for services but after pilot testing various payment options.</p>
<b>Local Cost Recovery</b>	<p>Ideally, the preferred cost recovery method in SWM is the one that separates service providers from directly receiving payments from clients/waste generators because it minimises a situation where waste is not collected and becomes environmental and public health menace because a client did not pay. However, in Taita Taveta, only businesses will follow this method of cost recovery. This strategy seizes the opportunity of the existing legislation - the Finance Act 2017 - which requires businesses to pay for licenses and the amount paid would include waste collection. Though the application of the Act is currently weak as the funds charged is far too less and is never used for SWM, there is an opportunity for improvement if certain actions are taken. Therefore, businesses/premises shall continue to pay for waste collection services through business license registration with adjusted costs and the waste shall be collected by the County Government.</p> <p>For households, however, the preference by the County Government is that the CBOs collect the funds directly and in case of non-compliance, enforcement support will be provided to the CBOs by the County Government following the enforcement strategy elaborated under component 1 of this strategy.</p>



<b>Revision of the Finance Act 2017 on SWM collection fees</b>	<p>The finance Act 2017 stipulates that businesses shall pay a registration fee of Kenya Shilling (KES) 300/year (less than USD 3/year) and that this fee shall also cover waste collection services. However, these funds are collected by the finance department and does not benefit any SWM activities. Therefore, this Act will be amended to adjust the cost according to the correct cost of providing services as would have been calculated by the chief officer.</p> <p>The Act will also state that the said funds will be remitted to the Department of Water, Sanitation, Environment, Climate Change &amp; Natural Resources to be used for its sole intended purpose - SWM.</p>
<b>Revenue Administration Bill</b>	Finance Act only guides on revenue collection but regulations on how to manage the funds are detailed in the County Revenue admin Bill 2021 which is still under development but finalised in 2023. This Bill will provide laws that will ensure that waste management funds collected by the revenue department are channelled back to the Department
<b>Taita Taveta Climate Change Act 2022</b>	The recently enacted County climate change Act will allocate some percentage of its annual budget to support climate change interventions in the waste sector from 2023-2024 financial year.
<b>Infrastructure Investment Priorities</b>	<p>Infrastructural investment is required to improve SWM services as well the associated capacity building and technical assistance. The chief accountant shall prepare a detailed budget for infrastructural investment with priorities given to:</p> <ol style="list-style-type: none"> <li>1. Investment in heavy machinery and other equipment for the improvement of the disposal sites.</li> <li>2. Investment in collection vehicles for secondary collection, handcarts/dicycles for primary collection and tools and PPE.</li> <li>3. In the short term, invest in the establishment of at least 1 additional MRF to be located in Taveta sub-county since the one currently under construction will only serve Voi, Wundanyi and Mwatate. In the long-term additional MRFs will be established in the county.</li> <li>4. Investment in upgrading the approximately 5 kilometers of the untarmacked road leading to Riata dumpsite from the main road, to an all-weather road.</li> </ol>
<b>Sources of Investment</b>	Together with the SWM technical officers, the chief accountant shall prepare proposals on the listed priority areas of investment and seek investment from the national government, grants and loans from international development partners, climate and plastic pollution prevention financing, mechanisms philanthropic donations, and the private sector.
<b>Inclusion of SWM budget in county assembly discussions</b>	<p>There is need for good political goodwill with the county assembly.</p> <p>The chief accountant has never been called to the county assembly to discuss SWM issues: SWM is always any other business in the assembly. The County Executive Committee Member (CECM) shall push for the agenda of SWM and specifically the budget to be discussed in the county assembly with the goal of increasing the percentage of the county funds allocated to SWM.</p>



## 2.6 Component 6: Inclusive Participation

Although local authorities are the major players in MSWM, sustainability and effectiveness may not be achieved without the involvement of all the relevant stakeholders including users and service providers. In Taita Taveta County, the county government is the sole provider of collection services and a handful of the informal private sector are involved in collection.

The degree of involvement of the public (i.e. households, businesses and other waste generators) in planning and implementation of SWM services, as well as the evaluation of the quality of service, is low in Taita Taveta County. Though occasional public awareness campaigns and consultations are conducted by the county government, the majority of the public still lack awareness on the importance of safe waste disposal, the repercussions of illegal dumping and open burning and the significance of paying for SWM services. Taita Taveta County will adopt an inclusive approach to public participation and will design and implement Community Education and Awareness

Programmes (CEAP). In addition, an environmental protection and enforcement unit/team will be formed and deployed to monitor the effectiveness of CEAP and ensure compliance of by-laws by the public.

The inclusion of non-municipal service providers (i.e. the formal private, CBOs or 'informal' sectors) in the provision of SWM services is limited to recycling activities. The weak SWM system in Taita Taveta County, particularly the low waste collection coverage, can be attributed to the lack of involvement of non-municipal service providers. Based on the analysis of the current collection system, the inclusion of private waste collection companies is not feasible in the short to medium term but will be explored in the long term. Instead, the inclusion of CBOs is more practical and will provide effective results in terms of increased collection coverage and environmental protection which the county is in dire need of, while creating employment opportunities for youth.

Table 8: Inclusive participation Measures

<b>Public education and awareness</b>	<p>A community public awareness and implementation plan will be developed. This will be implemented in collaboration with the CBOs who will be included in the provision of waste collection services. The programmes will be at regular intervals defined by the county in consultation with the CBOs. public health community volunteers will also be consulted and included.</p> <p>The education and awareness campaigns will be conducted through community barazas/committees, religious institutions, schools, social media, TV and radio stations. In addition, the involvement of all relevant county departments to disseminate information will be crucial.</p> <p>Target audience shall include: landlords, tenants, schools, traders i.e., all waste generators, village leaders and CBOs. They will be educated on a wide range of SWM topics such as collection and collection fees, segregation, disposal, public health implications from poorly managed/disposed waste. open burning among others.</p>
<b>Public participation channels</b>	Several channels of communication will be explored to enable the public to provide feedback on the quality of services offered and their opinions on SWM activities in the county. Such channels may include but not be limited to: community barazas/committees, community clean-up exercises, hotline phone numbers, social media.
<b>Inclusion of waste management in education curriculum</b>	An environmental course, specifically on ' <i>Waste Management</i> ', will be introduced in schools' curriculum starting with the Early Childhood Development Education to ensure the culture is embedded in children at a very early age.
<b>Waste collection CBOs</b>	Several groups will be identified, registered and tasked with waste collection in zoned areas. The CBOs should come from or reside in the designated zones. They will also spearhead the implementation of public awareness campaigns.



<b>Representation of the formal and informal recyclers</b>	<p>The formal and informal recyclers, including waste pickers and staff at the MRFs, will be encouraged to form an association which will act as an umbrella body for all recyclers in Taita Taveta County. Through their representatives they will be directly involved in the planning and establishment of any new recovery facilities and other SWM initiatives relevant to them. Whilst the strategy prefers that all informal recyclers be formalised, their immediate involvement should not be dependent of the formalisation but rather willingness to participate.</p> <p>The association will have by-laws that not only manages day to day activities of recyclers but also standardised prices for recyclables</p> <p>It is envisioned that the association may become a Sacco eventually.</p>
<b>Private waste collection companies</b>	<p>In the long term, and if deemed necessary depending on the performance of the CBOs, the county will explore the formation of private collection companies to assist with either primary or secondary collection or both.</p>

## 2.7 Component 7: Data and monitoring

The importance of a database framework for the SWM system in any city cannot be understated. The availability of data helps in not only measuring the successes and failures of measures put in place to improve SWM but also provides evidence-based decision making in infrastructure and policy development as well as service provision.

Until now, Taita Taveta County, did not have any data on waste generation, collection and recovery rates. The recent waste audit has shed light on this sets of data and the county government is required to maintain an updated data and information by conducting audits at regular intervals. One of the shortcomings

of the data collected during the audit is the fact that some of it had to be estimated particularly the data on recovery and collection rates. Therefore, the county will strive to have measures that ensure that the required equipment such as weighbridges at the disposal sites and recovery facilities are installed.

Additionally, the documentation of awareness campaigns, street and drain cleaning schedules and evidence of clean streets and drains would be used to measure the effectiveness of the awareness campaign and street cleaning activities.

*Table 9: Data and Monitoring Measures*

<b>Quantitative and Qualitative Data platform</b>	<p>Weighbridge data at disposal and recovery facilities will be captured and managed by the County under a management information system/Data center to be established. Private recovery facilities will be required to report their data on a predetermined interval to the county. Meanwhile, at Chakaleri dumpsite/new site and Riata, staff will be deployed during the day who will record number of trucks bringing waste to the site, among other tasks.</p> <p>The waste audit data used to develop this strategy will be updated every 3 years to keep up with the performance of SWM system in Taita Taveta County. Qualitative data, such as reclaimed illegal dumpsites, cleaned drains/streets, community engagement sessions shall be captured, stored and maintained digitally.</p>
<b>Monitoring and Evaluation</b>	<p>Progress towards achieving the goals and targets of this Strategy will be monitored and evaluated using an established set of benchmark indicators. It is recommended that the first review of the strategy takes place after 3 years in order to identify challenges and learn from the implementation experience with a view of revising the strategy if necessary.</p> <p>Monitoring activities, such as UN-Habitat WaCT application at regular intervals will help with assessing the effectiveness of the MSW interventions.</p>



# CHAPTER

# 03

# Action Plan



Table 10: Priority Implementation Actions: Year 1-3

Component	Priority Strategic Actions	Targets	Performance Indicators	Strategic Outcomes	By when?	Responsibility
Policy and legal framework	Establishment and adoption of regulations for improved SWM. This will capture, among other aspects, the laws and by-laws that govern payment of waste collection services by all generators and illegal dumping/disposal	At least 1 SWM regulations document is developed	Approved waste management regulations/Act for Taita Taveta County	SWM system in Taita Taveta County is anchored on a legal framework to ensure sustainability	2024	Department of Water, Sanitation, Environment, Climate Change & Natural Resources
	-Revision of existing County finance ACT 2017 to reflect the actual cost of waste collection from Business premises -Development of the county finance Bill	The county finance Act is revised County finance Bill document developed	-Revised County Finance ACT 2023 approved -County Finance Bill 2023 Approved	Guaranteed financial Resources for day to day operations of SWM	2023/2024	County Department of Finance
	-Formation of Municipal boards and town committees	At least 1 municipal board and 1 Town committee functional	Municipal boards and Town Committees take charge for street sweeping and drain cleaning activities	Integrated waste management functions	2024	-Lands Department - Department of Environment

Component	Priority Strategic Actions	Targets	Performance Indicators	Strategic Outcomes	By when?	Responsibility
Collection and transportation services	Acquire primary collection equipment- Tuktuks, pushcarts, electric bicycles with cart, etc), Tools and PPE Municipal budget diagnostics to find funds for acquiring primary collection equipment Implement primary collection systems for all waste generators to improve coverage and reliability of service	-At least 10 CBOs are registered to provide primary collection services for households and provided with collection equipment, tools and PPE -Waste collection zones are developed and allocated to CBOs -A primary collection system including schedule developed per zone -At least 46 existing receptacles improved with access gates (18 in Voi, 11 Mwatate, 10 in Wundanyi and 7 in Taveta) -Primary collection schedule for business premises and institutions developed	-Primary collection system for households and business and institutions is established and operationalized -No waste spillage in the vicinity of the receptacles -No waste observed in drains and open spaces. No open burning observed	-Improved access to, and coverage of waste collection services in the county -Employment created for youths and women through waste collection activities	2024	-Department of Social Services -Department of Environment -NEMA -Department of Health Department of Devolution, Public Service & Administration (Coordination)
	Acquire primary collection equipment- Tuktuks, pushcarts, electric bicycles with cart, etc), Tools and PPE Municipal budget diagnostics to find funds for acquiring primary collection equipment Implement primary collection systems for all waste generators to improve coverage and reliability of service	-At least 1 new collection vehicle acquired for Taveta sub-county -All existing collection vehicles serviced and repaired. -A budget line specifically for fuel, maintenance and repairs is set.	No delayed collection from receptacles due to lack of fuel or breakdown of vehicles	Improved waste collection coverage, efficiency and infrastructure	2023/2024	Department of Environment Depart of finance & planning



Component	Priority Strategic Actions	Targets	Performance Indicators	Strategic Outcomes	By when?	Responsibility
<b>Waste Recovery and Circular Economy</b>	Establish waste recovery infrastructure	-Completion of the Material Recovery facility at Chakaleri dumpsite -Construction of at least 1 Material Recovery facility in Taveta sub-county with minimum capacity of 5 tonnes/day	Recovery rate increased from the current 1% to at least 10% in the next 3 years Valuable recycled products are made in Taita Taveta County	-Increasing the waste recovery rate -Bankability of the MRFs	Chakaleri MRF completed by 2024 MRF in Taveta-2026	-Department of lands and mining -Department of Environment -Department of public works and Infrastructure
	Empower formal and informal recyclers including waste pickers	-Register and train at least 15 waste pickers at Chakaleri dumpsite -Map out and register all informal recyclers in all the four sub-counties and include them in the NHIF and NSSF schemes.	-An association of waste recyclers is formed -All recyclers have better working conditions, PPEs and access to market with stable prices. - at least 15 waste pickers trained	Decent jobs are created in the recycling sector	2023	-Department of Environment -Department of Social services
	Incentives for waste recyclers	Regulations on tax and other incentives for recyclers developed	Number of registered private recycling companies increase from the current 2 to at least 5	Boosting the recovery sector	2024	Department of Environment

Component	Priority Strategic Actions	Targets	Performance Indicators	Strategic Outcomes	By when?	Responsibility
<b>Waste Disposal</b>	Perform a feasibility study to upgrade existing disposal facilities Upgrade existing disposal facilities	At least 1 existing disposal facility, Chakaleri/new site, is upgraded to a basic level of environmental control.	A feasibility study report is developed and approved Chakaleri dumpsite/new site upgraded and operating efficiently	Improved waste disposal and operational efficiency	2024	-Department of Environment -UN-Habitat
	Investment in waste disposal infrastructure	A compactor and a bulldozer acquired for continued compacting and covering Or A budget line for recurrent hiring of the heavy machinery for the maintenance of the disposal site is established	Confinement, Compaction and Cover at Chakaleri disposal site is performed at least once per week.	Improved waste disposal and operational efficiency	2024	-Department of Environment -Department of Public Works & Infrastructure
	Investment in SWM infrastructure	Investment proposals are developed for; (i) acquisition of waste collection vehicles, (ii) heavy machinery for operations at disposal sites, (iii) improving dumpsites to sanitary engineered landfills and (iv) construction of additional MRFs and receptacles.	Proposals submitted to relevant financial institutions for grants and loans.	Bankability	2024	Department of Environment
<b>Financial Sustainability</b>	Strengthen municipal budget line for solid waste management	Annual budget line for solid waste management increased from the current KES 3 million to at least KES 5 million	Approved annual budget for SWM	Sustainable finances for recurrent costs of waste management	2023/2024	-Department of Environment -Department of Finance -Municipal Boards & Town committees
	Implement cost recovery waste collection services	The correct cost of waste collection for households and business premises/ institutions is defined and captured in the local regulations	At least 50% of all households and all businesses and institutions are paying the correct cost of waste management services.	Sustainable finances for recurrent costs of waste management	2026	-Department of Environment -Department of Finance



Component	Priority Strategic Actions	Targets	Performance Indicators	Strategic Outcomes	By when?	Responsibility
<b>Inclusive Participation</b>	Conducting awareness and education campaigns for all waste generators	Solid waste management awareness and education campaign programmes are developed and activated in each ward.	<ul style="list-style-type: none"> <li>-Awareness and education campaign conducted and documented at least once per month.</li> <li>-Feedback channels such as social media handles and hotlines are set up for the public</li> <li>-Adverts on SWM are aired at the local major television and radio channels</li> </ul>	Improved awareness, participation and safe waste management behavioral practices	2024	<ul style="list-style-type: none"> <li>-Department of Environment</li> <li>-Department of Public Health</li> <li>-NEMA</li> <li>-Department of Devolution, Public Service &amp; Administration</li> <li>-CBOs</li> </ul>
<b>Data and Monitoring</b>	Normalise data collection and reporting	<ul style="list-style-type: none"> <li>-A weighbridge is installed at Chakaleri dumpsite and a data base of truck loads developed</li> <li>-Data from recovery facilities is reported on a regular basis</li> <li>-Digital data platform for cleaned drainages, streets and public spaces created</li> </ul>	Operational data collection and reporting system established in each municipality	Improved evidence – based planning and decision making	2026	Department of Environment & Municipalities



## — ANNEX 1 —

# Control ladder of waste disposal and recovery facilities



## Disposal facilities

Level of control	Characteristics	Characteristics
Full Control	<ul style="list-style-type: none"> <li>Waste daily covered</li> <li>Waste compacted</li> <li>Site fenced and full 24-hour control of access</li> <li>Properly sited, designed and functional sanitary landfill</li> <li>Leachate containment and treatment</li> </ul>	<ul style="list-style-type: none"> <li>Landfill gas collection and flaring and/or utilization</li> <li>Site staffed</li> <li>Post closure plan</li> <li>Weighing and recording conducted</li> <li>Protection of workers' health and safety</li> </ul>
Improved Control	<ul style="list-style-type: none"> <li>Waste periodically covered</li> <li>Waste compacted</li> <li>Site fenced and control of access</li> <li>Leachate containment and treatment</li> </ul>	<ul style="list-style-type: none"> <li>Landfill gas collection</li> <li>Site staffed</li> <li>Weighing and recording conducted</li> <li>Protection of workers' health and safety</li> </ul>
Basic Control	<ul style="list-style-type: none"> <li>Some use of cover</li> <li>Waste compacted</li> <li>Sufficient equipment for compaction</li> <li>Site fenced and control of access</li> <li>No fire/smoke existence</li> </ul>	<ul style="list-style-type: none"> <li>Site staffed</li> <li>Weighing and recording conducted</li> <li>The slope of the landfill is stable, landslides not possible</li> <li>Protection of workers' health and safety</li> </ul>
Limited Control	<ul style="list-style-type: none"> <li>No cover</li> <li>Some compaction</li> <li>Some equipment for compaction</li> <li>Some level of access control/fencing</li> <li>No leachate control</li> </ul>	<ul style="list-style-type: none"> <li>Some fire/smoke existence</li> <li>Site staffed</li> <li>Weighing and recording conducted</li> <li>The slope of the landfill is unstable with high possibility of a landslide</li> </ul>
No Control	<ul style="list-style-type: none"> <li>No cover</li> <li>No compaction</li> <li>No/ limited equipment</li> <li>No fencing</li> <li>No leachate control</li> </ul>	<ul style="list-style-type: none"> <li>Fire/smoke existence</li> <li>No staff</li> <li>The slope of the landfill is unstable with high possibility of a landslide</li> </ul>

## Recovery facilities

Level of control	Characteristics	Characteristics
Full Control	<ul style="list-style-type: none"> <li>Built to and operating in compliance with current national laws and standards</li> <li>Pollution control compliant to environmental standards</li> <li>The nutrient value of biologically treated materials utilized for separate organic waste (e.g. in agriculture/horticulture)</li> </ul>	<ul style="list-style-type: none"> <li>Protection of workers' health and safety</li> <li>Materials are extracted, processed according to market specifications, and sold to recycling markets</li> <li>Weighing and recording of incoming loads conducted</li> <li>All outgoing loads registered by weight and type of destination</li> </ul>
Improved Control	<ul style="list-style-type: none"> <li>Engineered facilities with effective process control</li> <li>Pollution control compliant to environmental standards</li> <li>Protection of workers' health and safety</li> </ul>	<ul style="list-style-type: none"> <li>Evidence of materials extracted being delivered into recycling or recovery markets.</li> <li>Weighing and recording of incoming and outgoing loads conducted</li> </ul>
Basic Control	<ul style="list-style-type: none"> <li>Registered facilities with marked boundaries</li> <li>Some environmental pollution control</li> </ul>	<ul style="list-style-type: none"> <li>Provisions made for workers' health and safety</li> <li>Weighing and recording of incoming and outgoing loads conducted</li> </ul>

Limited Control	<ul style="list-style-type: none"> <li>Unregistered facilities with distinguishable boundaries</li> <li>No environmental pollution control</li> </ul>	<ul style="list-style-type: none"> <li>No provisions made for workers' health and safety</li> <li>Weighing and recording conducted</li> </ul>
No Control	<ul style="list-style-type: none"> <li>Unregistered locations with no distinguishable boundaries</li> <li>No provisions made for workers' health and safety</li> </ul>	<ul style="list-style-type: none"> <li>No environmental pollution control</li> </ul>









The image features a solid blue background. In the upper right and lower left corners, there are decorative elements consisting of a thin orange arc and a solid green semi-circle. A horizontal light blue band is positioned across the middle of the page, containing the website address.

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