



LUSAKA CITY COUNCIL  
PUBLIC HEALTH DEPARTMENT  
CIVIC CENTRE LUSAKA



# Lusaka Solid Waste Management Improvement Plan 2022-2026



## FOREWORD

**Lusaka City Council (LCC) is committed to making Lusaka clean, green and healthy. As the capital city of Zambia, and the city connecting Zambia with the rest of the world, we are committed to ensuring that the city is beautiful for our residents and welcoming to our visitors. Solid Waste Management (SWM) is a vital component of realising a clean, green and healthy city and so I am excited at the development and implementation of the Solid Waste Management Improvement Plan (SWMIP) for the Greater City of Lusaka.**

All stakeholders must come together and support the implementation of this plan. SWM requires concerted efforts from residents, communities, civil society, private sector, donor community and other local government institutions. We all need to work together to reduce the amount of waste that is produced, re-use and recycle more waste, and transport what remains to designated disposal sites.

Successful implementation of the SWMIP will set the Greater City of Lusaka on course to become a sustainable city. Improving waste management, preventing pollution and improving delivery of other basic services like water and sanitation will ensure that we create a liveable city for all, promote health and well-being, and ultimately contribute to sustainable livelihoods and national economic growth.

I look forward to Lusaka City Council (LCC) achieving the targets that have been set in the SWMIP, and ultimately attaining the goal of making Lusaka clean, green and healthy.

A handwritten signature in black ink, which appears to read 'Chilando'.

**Chilando Chitangala**  
MAYOR  
LUSAKA CITY COUNCIL

**The continued accumulation of solid waste around the City of Lusaka is a manifestation of the city's increasing population, resident's lifestyle and poor management of solid waste.**

Lusaka City Council (LCC), like many other urban councils in the region, experiences challenges with effective solid waste management. Poor solid waste management has led to blocked drainages, contamination of water, air pollution and other public health challenges. These challenges in turn have contributed to the proliferation of diseases like cholera, typhoid, and respiratory infections. Further, inadequate management of solid waste threatens the ability of LCC to achieve the goals on solid waste management outlined in the Zambia Vision 2030 and United Nations Sustainable Development Goals (SDGs).

This Solid Waste Management Improvement Plan (SWMIP) is therefore essential and brings forth initiatives and technologies that will help the City of Lusaka to curb the growing challenge of solid waste. Through our commitment to sustainable development in all sectors including solid waste management, the SWMIP will enable the Local Authority to optimise solid waste management in Lusaka City. The plan also speaks to the Zambia Vision 2030, the national plan that aims to have 80 percent of all waste that is generated to be collected and transported to designated waste disposal sites.

As the Greater City of Lusaka, we aim to promote sustainable environmental management through solid waste reduction technologies in the following; production, sustainable product design, resource efficiency and waste prevention, re-using products where possible, and



recovering value from products. A systematic application of strategic goals of the SWMIP will help improve waste management in the city.

Finally, the issue of solid waste management affects every person and institution in the city. Partnership by all stakeholders is required to actualise the objectives and targets of the SWMIP. The measures set out in this plan cannot be undertaken without a collective approach to managing solid waste challenges, and the involvement of a broad range of stakeholders during implementation. Therefore, I call on everyone to get on board and support the implementation of the SWMIP.

A handwritten signature in black ink, appearing to read 'Alex Mwansa'.

**Alex Mwansa**  
TOWN CLERK  
LUSAKA CITY COUNCIL

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## ACKNOWLEDGMENTS

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Further acknowledgements go to the core team from LCC which worked on the plan; Edgar C. Mulwanda, Kachikoti Banda, Lorrain Tembo, Gift Mwiinga, and George Sichimba.

## ABBREVIATIONS AND ACRONYMS

<b>CBE</b>	Community Based Enterprise(s)
<b>HR</b>	Human Resource(s)
<b>KPI</b>	Key Performance Indicator
<b>GIZ</b>	Deutsche Gesellschaft für Internationale Zusammenarbeit
<b>LAP</b>	Local Area Plan(S)
<b>LCC</b>	Lusaka City Council
<b>LUWSI</b>	Lusaka Water Security Initiative
<b>MCA-Z</b>	Millennium Challenge Account-Zambia
<b>MSW</b>	Municipal Solid Waste
<b>PPE</b>	Personal Protective Equipment
<b>PPHPZ</b>	People's Process on Housing and Poverty in Zambia
<b>PSP</b>	Private Sector Partners
<b>RDF</b>	Refuse Derived Fuel
<b>SG</b>	Strategic Goal
<b>SRF</b>	Secondary Recovered Fuel
<b>SW</b>	Solid Waste
<b>SWM</b>	Solid Waste Management
<b>SWMIP</b>	Solid Waste Management Improvement Plan
<b>SWMC</b>	Solid Waste Management Company
<b>UNDP</b>	United Nations Development Programme
<b>WMD</b>	Waste Management District

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# EXECUTIVE SUMMARY

## BACKGROUND

The population of Lusaka is estimated to be above 2.5 million. Almost 70 percent of residents live in peri-urban areas that are unplanned settlements. The city generates about 1,200 tonnes of waste per day. However, only about 55 percent of this is taken to Chunga Landfill, the designated disposal site for the city. The volume of waste being generated in the city continues to increase at a faster rate than the ability to manage it; this is due to rising population, inadequate waste management resources, and indiscriminate illegal dumping and littering by the public. Most members of the public lack awareness and knowledge on responsible waste management.

To ensure effective management of waste, Lusaka City Council (LCC) works in partnership with private waste management companies, franchise contractors and Community Based Enterprises (CBEs) to service conventional and peri-urban areas in the city. Currently, LCC has 24 Waste Management Districts (WMDs) for conventional areas which are serviced by franchise contractors and 180 Zones in peri-urban areas which are serviced by CBEs.

## RATIONALE

Due to waste management challenges in Lusaka City, LCC have developed a strategic roadmap to holistically address solid waste management, the Solid Waste Management Improvement Plan (SWMIP). The city's 15-year Solid Waste Strategic Plan expired in 2017. In 2018, with support from the United States of America (USA) government, Millennium Challenge Account-Zambia (MCA-Z) spearheaded the process of articulating the SWMIP which provides various options for solid waste improvement.

The main objective of the SWMIP is to give direction for improving solid waste management in the city. The SWMIP seeks to contribute to the achievement of global, national and city goals on solid waste management and focuses on the near-term improvement of all elements of the solid waste management system in the Greater City of Lusaka from 2022 to 2026.

## SWMIP GOALS

The SWMIP has identified 9 Strategic Goals (SGs) necessary to achieve a cost-effective process for waste management. Targets for the SGs include: collecting 80 percent of all waste generated in the city and

transporting it to designated disposal sites or recycling companies; achieving 30 percent recycling of all waste collected by 2026 by sorting waste at the generation point and creating sorting stations; and reengineering the Chunga Landfill to improve landfill management. To ensure that the overall improvement and strengthening of solid waste management is feasible, the SGs have been prioritised based on importance and urgency into: Scenario 1 (most important and very urgent); Scenario 2 (important and urgent); and Scenario 3 (less important and not urgent). SGs in Scenario 1 have a higher priority at implementation than those under Scenario 2 and Scenario 3. Strategic actions (strategies) will be executed to achieve specific targets under the SGs. One or more strategies will need to be performed to achieve a specific SG. Further, it is possible for a strategy to contribute to achieving targets for more than one SG. The strategies are prioritised as high, medium and low depending on the time required to fully implement them. Priority SGs and strategies are outlined in the SWMIP.

## SWMIP FRAMEWORK

Finally, the SWMIP recommends enabling framework options (technical, legal/regulatory, institutional, financial, economic social inclusion, and private sector participation) on how best to achieve cost-effective progress towards successful and sustainable solid waste management in Lusaka City. These options lay out laws, regulations, policies, institutional structures, enforcement systems, social requirements, financial systems, cost recovery mechanisms, market incentives, private sector incentives and other support systems that will be implemented to achieve the set SGs. The enabling framework is expected to provide market incentives to encourage investments in the sector while applying deterrents that collectively stimulate good behaviours by waste generators and service providers. The SWMIP sets a pathway to improving solid waste management in Lusaka City between 2022 and 2026 with support from residents, the community, civil society, private sector, central government and cooperating partners.



Freedomway Road, Lusaka

# 01

## BACKGROUND

**Lusaka's population is estimated to be above 2.5 million, and the city is growing rapidly. Lusaka dominates the country's urban system with almost 70 percent of the city's population living in peri-urban areas that are mostly unplanned settlements. The city is experiencing typical expansion challenges associated with urbanisation such as population growth, high levels of unemployment, poor security, poor housing, and inadequate basic services (waste management, access to clean water and safe sanitation). Inadequate access to basic services has made Lusaka City residents vulnerable to public health threats, including epidemics such as cholera which is endemic in the city.**

Lusaka City generates about 1,200 tonnes of waste per day. However, only about 55 percent of this reaches Chunga Landfill, the city's designated disposal site. Chunga Landfill is located on the northern side of the City of Lusaka, on the border with Chisamba District in Central Province. Lusaka City has been growing around the landfill which accommodates all the waste from everywhere in the city. The volume of waste generated has continued to increase at a faster rate than the ability of Lusaka City Council (LCC) to manage it due to inadequate

waste management resources. These resources include specialised human resources, equipment including Personal Protective Equipment (PPE), technology, and funding. Another factor limiting LCC from effectively managing waste is indiscriminate illegal dumping and littering by the public. Most members of the public are seemingly not sensitive to garbage lying around unattended, and lack awareness and knowledge on responsible waste management practices.

To ensure effective management of waste, LCC works in partnership with Private Sector Partners (PSPs) in waste management. The PSPs are either franchise contractors and/or Community Based Enterprises (CBEs) that service conventional and peri-urban areas in the city respectively. Currently, LCC has 24 Waste Management Districts (WMD) for conventional areas serviced by franchise contractors and 180 Zones in peri-urban areas which are serviced by CBEs.

## 1.1 Rationale

**Due to waste management challenges in Lusaka City, there is need for LCC to have a proactive and strategic roadmap to holistically address Solid Waste Management (SWM).**

Solid waste management is one of the strategic areas for social economic development considering its connection to health, human development, environmental protection (especially ground water protection), disaster risk reduction, climate change mitigation and adaptation. Solid waste is also important for improving the investment climate through a clean and healthy city as well as increasing business opportunities in the solid waste management value chain.

The last Solid Waste Strategic Plan expired in 2017 and was implemented between 2002 and 2017. In 2018, with support from the United States of America (USA), the Millennium Challenge Account-Zambia (MCA-Z) spearheaded the process of articulating a new Solid Waste Management Improvement Plan (SWMIP) for

Lusaka City. The SWMIP provides various options for solid waste improvement in the city.

To develop the SWMIP, LCC with support from its cooperating partners held several consultative meetings to produce an action plan on SWM. These partners include the Ministry of Local Government and Rural Development, Ministry of Health, People's Process on Housing and Poverty in Zambia (PPHPZ), WaterAid Zambia, Zambia Environmental Management Agency (ZEMA), Zambia Homeless and Poor People's Federation, Waste Management Association of Zambia and the Natural Resources Stewardship (NatuRes) Programme implemented by Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ).



Freedomway Road, Lusaka

## 1.2 Solid Waste Management Improvement Objectives

The main objective of the SWMIP is to give LCC an implementation plan for managing solid waste in the city. It provides a near-term enabling framework regarding how best to achieve cost-effective progress towards realising LCC's strategic goals for solid waste management and the Zambia Vision 2030. The plan aims to:

- ☑ Achieve a cost-effective process of collecting 80 percent of all the waste generated and have it transported to designated disposal sites or recycling companies in line with Zambia Vision 2030.
- ☑ Achieve 25 percent recycling of all waste collected by 2025 by sorting waste at the generation point and creating sorting stations.
- ☑ Reengineer Chunga Landfill for improved landfill management.

To optimise sustainability and minimise financial demands, the SWMIP places high preference on an enabling framework that creates incentives and applies deterrents that collectively lead to good behaviours by waste generators and service providers. This should result in reduced overall costs of services to consumers and increased cost recovery by service providers.

## 1.3 Solid Waste Management Improvement Plan Implementation



Junction of Cairo Road and Church Road, Lusaka

The Governance and Implementation of this plan will be led by either the Public Health Department at LCC or the Solid Waste Management Company (SWMC). Implementation will be governed by local governance arrangements as defined by the Zambian Constitution, the Local Government Act Number 2 of 2019 and other relevant laws. LCC will enable Ward Development Committees to effectively perform their development coordination functions in line with section 37 of the Local Government Act of 2019. Internally, the SWMIP will be implemented through strong collaborative

and synergistic links with all LCC departments, especially those connected to development planning, land administration, development control and enforcement of regulations.

The SWMIP will be implemented in accordance with Local Area Plans (LAPs) for each ward, and Integrated Development Plan for Lusaka District and surrounding areas. Implementers will promote and actively collaborate with other organizations within multi stakeholder partnerships of private sector, civil society and government agencies

## 02

# THE WASTE HIERARCHY

The SWMIP has adopted the waste hierarchy as a key principle for developing solid waste management systems. The focus of the waste hierarchy is to prioritise activities that eventually lead to minimising the need for land disposal of solid waste. Most often the Waste Hierarchy is shown by using an inverted pyramid depicting the 4 R's, in their sequence of priority, as follows:



Chunga Landfill, Chunga, Lusaka



## REDUCE

Reduction of the amount of waste being generated at the source of possible waste generation and reduction of the hazardous content of waste, by industries using improved principles of "green" manufacturing.



## REUSE

Reuse of a material or product at the source of possible waste generation, rather than wasting it, by concepts such as product stewardship by manufacturers, waste exchanges between manufacturers, and industrial use of recyclables as manufacturing feedstock.



## RECYCLING

Processing waste commodity materials, such as paper, plastic and metal, by mechanical techniques such as sorting belts, screens, magnetic separators, air classifiers.



## RESOURCE RECOVERY

Making new resources from waste, by techniques such as: gasification to synthetic fuel, biological digestion to biogas, aerobic decomposition to compost, incineration to electricity, and Refuse Derived Fuel (RDF) for use in cement kilns to replace coal requirements in the cement process.

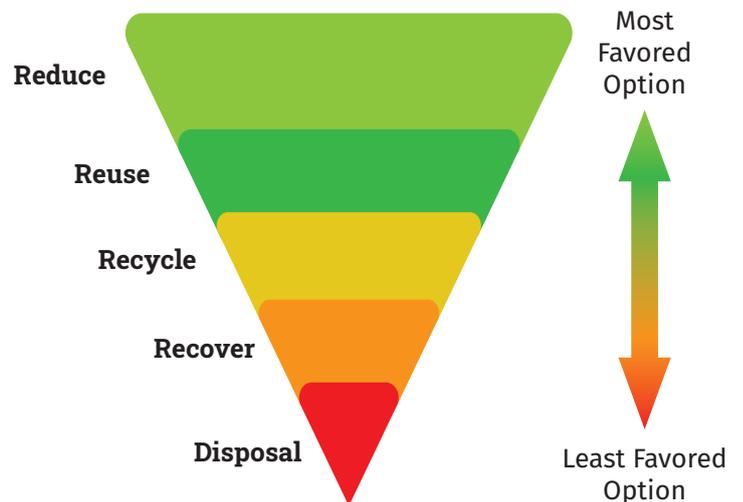


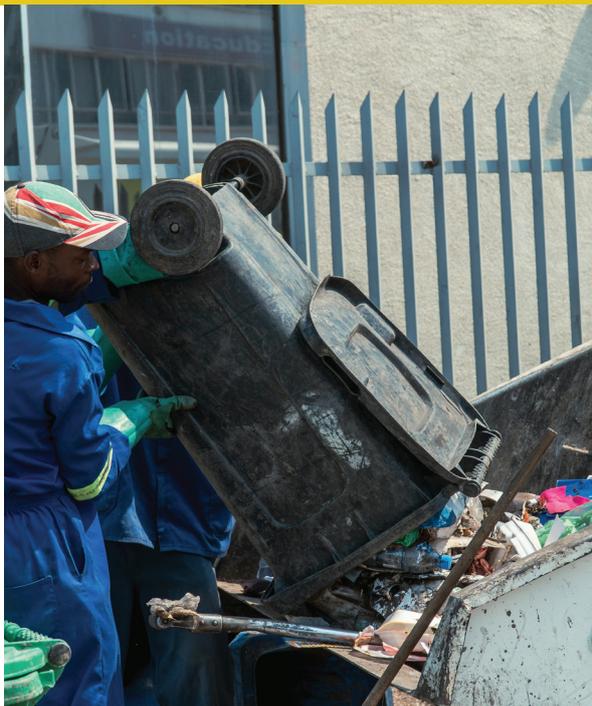
Figure 1: The Waste Hierarchy

## 2.1 Recycling Concepts

**Reuse and recycling are activities that reduce waste quantities and they preserve natural resources. They conserve fossil fuels by saving on the inherent energy of each product that has been produced through mining, planting, processing, transporting, and/or manufacturing. Some examples of the natural resource savings include:**

- i. Recycling 1 tonne of paper saves 16 trees, 2 barrels of oil, 4100 kW of electricity, 1 cubic meter of land disposal space, and 27 kg of air pollution. Recycling half the world's paper could save 9 million hectares of forest.
- ii. Recycling 1 tonne of aluminium saves about 40 barrels of oil, thereby conserving 95 percent of the energy needed to make aluminium cans from virgin bauxite ore, and produces 97 percent less water pollution.
- iii. Producing 1 tonne of recycled rubber requires only 29 percent of the energy required to produce a tonne of rubber from virgin materials.
- iv. Recycling glass reduces silica mining waste by 70 percent, water use by 50 percent, and air pollution by 20 percent.
- v. Producing steel cans from recycled steel requires only 25 percent of the energy needed to produce it from virgin steel, and results in only 25 percent of the water and air pollution.
- vi. Recycling 1 million cell phones recovers 16,000 kg of copper, 320 kg of silver, 34 kg of gold, and 15 kg of palladium.

The SWMIP promotes collection of recyclables from the source of waste generation. This involves either separating collection of recyclables and general waste at waste collection, or combining collection of general waste and recyclables at waste generation source and sorting them at transfer stations. For industries and large commercial establishments, source segregation of key recyclables, such as paper, cardboard, metals and plastics will be promoted. On the other hand, waste generated at household level will be taken to transfer stations if source segregation and collection is not possible, especially in peri-urban areas.



Junction of Cairo Road and Church Road, Lusaka

## 2.2 Collection Concepts

Collection will be conducted by a wide range of mobile equipment selected to match neighbourhood conditions of access and waste storage. Due to traffic and increased economic activity, collection in the business district and other similar areas will be extended into the night when traffic is minimised. There will be sorting centres and/or aggregation points in peri-urban areas to encourage recycling.

All waste management fleet storage containers will be branded with guidance from LCC/SMW Company. Crew members will be in full PPEs. The consumer will be required to pay for any door-to-door waste collection service.

## 2.3 Resource Recovery Concepts

Resource recovery is the processing of a material inside waste into an entirely new resource. It is quite different from recycling where used metal is processed into new

metal, used plastic is processed into new plastic, used glass is processed into new glass, used oil is processed into new oil, used tires are processed into new rubber products, and used paper is processed into new paper or cardboard.

Resource recovery processing technologies tend to focus on the conversion of organic materials in waste to a new resource by one of three approaches, as follows:

- Biological conversion.
- Thermal conversion.
- Mechanical conversion.

## 2.4 Biological Conversion

The SWMIP will promote anaerobic and aerobic biological conversion at household and commercial level for organic waste to compost or biogas products. Biological conversion involves microorganisms converting putrescible organic material under either aerobic or anaerobic processing conditions to compost or biogas end products. The two common biological conversion methods are;

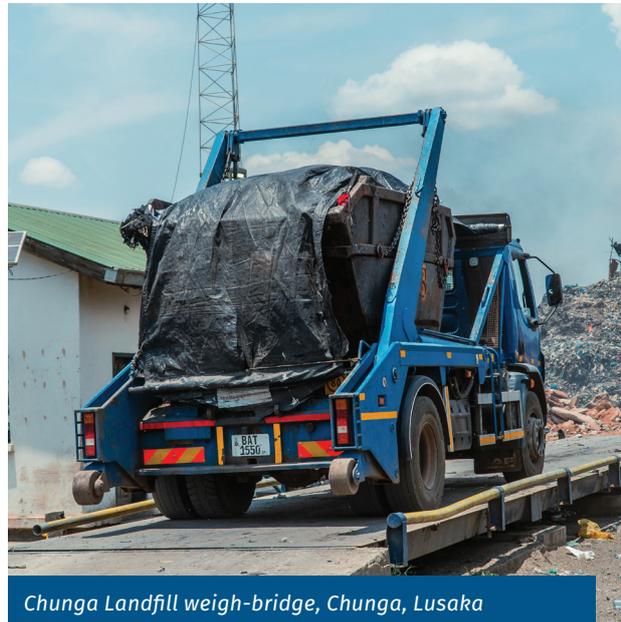
- Composting
- Anaerobic digestion

## 2.5 Thermal Conversion

The SWMIP will promote waste to energy technologies such as thermal conversion. Thermal conversion converts any type of organic waste to syngas, synfuel, or steam for energy generation. The commonly used thermal conversion methods are combustion and gasification.

## 2.6 Mechanical Conversion

Mechanical conversion involves the use of simple mechanical sorting, screening, processing and pelletizing to process dry organic materials into Refuse Derived Fuel (RDF), or the more quality-controlled and exportable product known as Secondary Recovered Fuel (SRF). SRF meets EU import standards. Localised air emissions of fine particulates and dust occur during mechanical conversion techniques to make RDF. When RDF or SRF products are burned in an industrial boiler, brick kiln or cement kiln to replace fossil fuels, they are still required to meet the same emission standards required of waste-to-energy facilities (i.e., the EU 2000



Chunga Landfill weigh-bridge, Chunga, Lusaka

Emission Standards). An important consideration when creating RDF is that Zambia will need to implement the EU 2000 Emission Standards requirements for any industrial burners or kilns that are using these fuels.

## 2.7 Landfill Concepts

A landfill is a technique used to dispose of waste in a way to prevent pollution and contamination of the environment. The cells in which the waste is disposed are designed as containment facilities. The SWMIP seeks to reengineer and redesign the city landfill to meet these requirements.

An improved interim landfill provides equipment to spread, grade, compact and cover waste while a sanitary landfill is engineered to provide full containment and management of leachate and landfill. Operations at existing disposal sites that can be improved to meet controlled interim landfill standards is recommended during the upgrading of disposal from open dumping to sanitary landfill. For Chunga Landfill, the SWMIP has provided for reengineering of the current site to an improved interim landfill.

The SWMIP will ensure that operations at Chunga Landfill will be improved to meet controlled interim landfill standards until a new sanitary landfill site is identified, designed and constructed.

## 03

# STRATEGIC GOALS

The SWMIP aims to contribute to the strategic goals at different levels: global, national and district.

## 3.1 Global level

At Global level, the SWMIP will endeavour to contribute to all the Sustainable Development Goals (SDGs) indirectly and directly in line with the principles of the Agenda 2030 for sustainable development (that the SDGs are interconnected and indivisible). The SWMIP will adopt a Human Rights Based Approach (HRBA), which serves as a foundation of the SDGs (Paragraph 10 of Agenda 2030 for Sustainable Development). LCC already adopted the HRBA during a Council meeting held in April 2019. See appendix 1 for a detailed link of the SWMIP to all the SDGs.



## 3.2 National Level

The SWMIP seeks to contribute to the achievement of national goals on solid waste management. To help achieve the global SDGs, Zambia came up with the Zambia Vision 2030, a blue-print document that outlines Zambia's anticipated path to becoming a middle-income country by 2030. Municipal SWM is critical for any city and has significant impacts on the health, well-being and prosperity of its residents. Zambia Vision 2030 targets that 80 percent of all generated solid waste in the country should be collected and transported to designated disposal sites.

The Seventh National Development Plan 2016-2021 (7NDP) is the country's blue-print for development. The 7NDP states that the following requirements must be met for the population to access adequate and effective SWM services and for the country to achieve

the Zambia Vision 2030 targets on SWM:

1. Institutional capacity development for LCC;
2. Provision of appropriate equipment and infrastructure;
3. Nationwide anti-litter awareness campaigns.

**Other policies that contribute to sustainable solid waste management are:**

- National Health Policy
- National Fire and Rescue Services Policy
- The Second National Agriculture Policy Of 2016
- The National Policy on Science and Technology Of 1996
- The National Education Policy
- The Decentralisation Policy of 2016

## 3.3 City Level

In efforts to contribute to the SDGs and the various National Goals on SWM, LCC has developed the Solid Waste Management Improvement Plan (SWMIP) for the Greater City of Lusaka. The SWMIP focuses on the near-term improvement of all elements of the solid waste management system in Lusaka District over a period of 5 years (2022-2026).

## 3.4 Strategic Goals

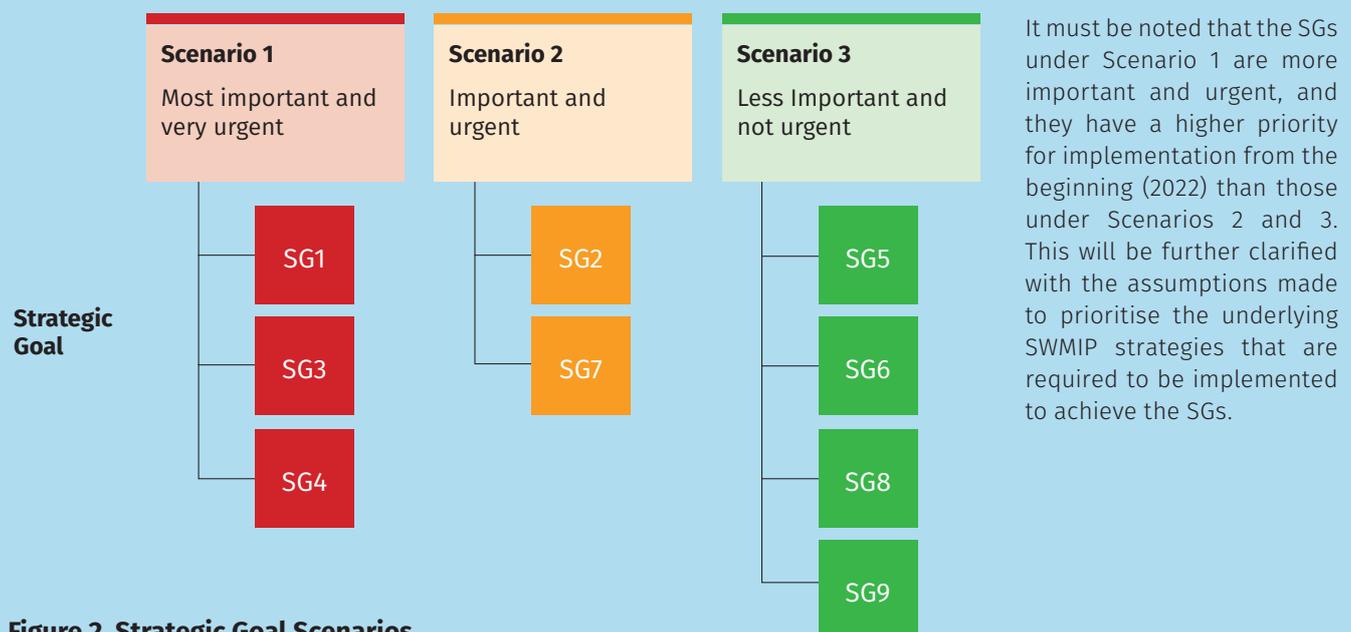
The SWMIP provides the near-term strategies/action plans that shall help achieve a cost-effective process towards realising the global, national and city Strategic Goals (SGs) for waste management.

The SWMIP will be aligned with the Strategic Goals described in Table 1.

**Table 1: Identified SWMIP Strategic Goals**

STRATEGIC GOAL (SG)	
Strategic Goal 1	80% collection and clean-up of municipal solid waste generated and transported to designated disposal sites.
Strategic Goal 2	80% of all waste generators who are provided with door-to-door collection services pay an affordable tariff by 2026. All collectors of domestic waste must hold a license from the municipality.
Strategic Goal 3	80% of the total collection and clean-up of MSW is handled by Private Sector Partners (PSPs) outsourced by LCC/SWMC.
Strategic Goal 4	Interim improved landfill at Chunga disposal site is achieved between 2022 and 2026, and a new modern sanitary landfill disposal site is fully operational and receives 100% of MSW by 2026.
Strategic Goal 5	100% of special non-hazardous waste handled by LCC/SWMC. Food and other consumables that require controlled disposal will be exclusively handled by LCC/SWMC.
Strategic Goal 6	80% of MSW collection and disposal operational costs are covered by revenues (e.g., license fees, tipping fees, user charges, penalties, etc.) by 2026.
Strategic Goal 7	80% of billings are efficiently collected to support cost recovery objectives.
Strategic Goal 8	30% of suitable commodity materials are recycled by 2026 (i.e., hard plastic materials, paper, cardboard, metals)
Strategic Goal 9	All designated disposal sites are 80% compliant with National Environmental Standards by 2030.

These SGs lead to strategic actions (strategies) that will be executed to achieve set targets. Three scenarios have been developed to ensure that the overall improvement and strengthening of the SWM sector is feasible. The strategic goals have been prioritised based on importance and urgency of each individual strategic goal. The three resulting scenarios are presented in Figure 2.

**Figure 2. Strategic Goal Scenarios**

### 3.5 Strategic Actions (Strategies)

Specific strategic actions (strategies) must be implemented to achieve the targets set under each SG. One or more SWMIP strategies will need to be performed to achieve a specific SG. Further, some of these strategies, while contributing to the SG’s above, will need to be implemented at national level by the Ministry of Local Government and Rural Development according to the Local Government Act (1991 and later amendments) and the Regional and Urban Planning Act Number 3 of 2015. Strategies have been prioritised as high, medium and low based on the time required to fully implement them as explained in figure 3.



**Figure 3: Strategic Actions prioritisation**

**By combining the priority settings of the SWMIP SGs with the priority settings of the strategies, 3 scenarios were developed:**

**Scenario 1:** Focus on all strategies with time Priority 1 with high intention to achieve priority SGs 1, 3, 4. All other strategies will be implemented with low intention and gradually over the 12 years’ timeframe.

**Scenario 2:** Focus on all strategies with time Priority 1 with high intention to achieve SGs 1, 2, 3, 4 and 7. All other strategies will be implemented with medium intention and more gradually over the 12 years’ timeframe.

**Scenario 3:** Focus on all strategies with time Priority 1 with high intention to achieve all SGs. All other strategies will be implemented with medium to high intention and more gradually over the 12 years’ timeframe.

It must be noted that setting an SG as high priority does not automatically mean that all related strategies also have a top priority at implementation. For example, while SG 1 is considered high priority, some of its underlying strategies like the creation of specific awards are considered medium priority. This specific strategy contributes to achievement of SG 1, however it is not a top priority to be implemented right away, hence it is given a timeframe status priority of 2. Tables 2 to 5 list all the identified strategies from high priority to low priority.

**Table 2: Key Strategies determined under Priority 1**

<b>Strategic Action (Strategies)</b>	<b>Strategic Goal (SG) contribution</b>	<b>Time frame Priority 1 Within 4 Years</b>	<b>Champion: U=Utility O=Other</b>
1. Implement upgraded disposal at Chunga Disposal Site	SG 1, 4	1	U
2. Require all service providers to provide a detailed quarterly report	SG 1	1	U
3. Improve the tariff structure to commercial/industrial establishments so that it reflects waste generation	SG2, 6	1	U
4. Improve the tracking of payments by digital systems and GPS information	SG 7	1	U
5. Develop the bundled tariff framework	SG7	1	U
6. Upgrade all weighbridges at locations where collection vehicles unload	SG1	1	U
7. Develop appropriate accounting systems and provide financial information through regular reporting	Support of all Strategic Goals	1	U

Strategic Action (Strategies)	Strategic Goal (SG) contribution	Time frame Priority 1 Within 4 Years	Champion: U=Utility O=Other
8. Secure donor support for an arrangement to provide new vehicles to franchisees under a lease-purchase agreement	SG1,3	1	O
9. Implement strong sanctions tied to all key SWM regulatory requirements	SG1, 9	1	O
10. Determine the ability and willingness of the public to participate in solid waste management services	SG1	1	U
11. Seek to minimise resettlement in the siting of new facilities and assure proper adequate compensation for any losses in income	As required by existing mandate(s) and to improve enabling environment for SWMIP implementation	1	O
12. Clean all public places and drainages	SG1, 3	1	O
13. Implement a new sanitary landfill site	SG4	1	U
14. Implement transfer stations that are strategically placed in Lusaka	SG1	1	U
15. Implement a separate disposal area for bulky and inert items	SG4	1	U
16. Gradually improve revenues to the point that all operating costs are covered within 10 years	SG6	1	U
17. Upgrade software at all weighbridges to assure that they provide digital download in real-time to formats that input into spreadsheets and management information systems	SG 1, SG 6, SG 7	1	U
18. Recognize that waste recycling and processing into recovered resources reduces the need for landfill	Awareness campaigns to be carried out on national level	1	O
19. Seek to minimise resettlement in the siting of new facilities and assure proper adequate compensation for any losses	To be carried out at national level by the Ministry of Local Government and Rural Development	1	O
20. Pilot programs to conduct public awareness for children using artists and teachers to develop materials to stimulate environmental consciousness and willingness to reduce littering and improve recycling	SG1, Campaigns	1	U
21. Baseline and annual social surveys on customer satisfaction	SG1, 2, 6, 7, 8	1	U
22. Implement Level 1 pre-processing at the new sanitary landfill	SG9	1	U

**Table 3: Key Strategies determined under Priority 2**

Strategic Action (Strategies)	Strategic Goal (SG) contribution	Time frame Priority 2: 4-8 years	Champion: U=Utility O=Other
1. Develop asset management programs for equipment and facilities with scheduled preventive maintenance and routine inspections	Standard management practice	2	O
2. Create a recycling award for the CBE that collects and sells the most recyclables	SG8	2	U
3. Create an award to the industry that uses the highest percentage of its feedstock from recycled wastes collected from local sources	SG8	2	O
4. Create a Clean CBE and Clean Waste Management District annual award	SG1	2	U
5. Create financial incentives and risk management options to encourage creation of special recycling industries	To promote improved efficiencies and growth of SWM activities	2	O
6. Provide grants for the communities that agree to participate in pilots for source segregation of recyclables	SG8	2	O
7. Examine the livelihood needs of informal sector waste pickers and recyclers	Following Human Rights Based Approach (HRBA)	2	O
8. Examine the opportunities for women to be included in the employment potential	Following SIGM protocols under LCC Social Inclusion and Gender Policy	2	O
9. Implement pilot recycling efforts in each CBE and franchise zone	SG8	2	U
10. Establish special waste license open competition systems	SG5	2	O
11. Upgrade financial accounting systems to connect to e-governance objectives and requirements including all necessary computer and software facilities	Aligned with e-governance protocols	2	U
12. Create financial incentives and risk management options to encourage creation of special recycling industries	To be carried out at national level by Ministry of Local Government and Rural Development	2	O
13. Create a clean industry and clean commercial establishment award	To be carried out at national level by Ministry of Local Government and Rural Development	2	O
14. Establish financial incentives for industries that change feedstock feeding systems and manufacturing processes to enable increased use of recyclables	To be carried out at national level by Ministry of Local Government and Rural Development	2	O

Strategic Action (Strategies)	Strategic Goal (SG) contribution	Time frame Priority 2: 4-8 years	Champion: U=Utility O=Other
15. Procurement provisions for waste service providers that require inclusion of women, disabled, and other socially disadvantaged groups	As promoted under LCC's Social Inclusion and Gender Policy; Human Resource (HR) Bound	2	O
16. Develop a private sector arrangement to provide Level 2 pre-processing of biodegradables	SG 8	2	O
17. Implement a pilot construction/ demolition debris recycling plant	SG 8	2	O
18. Implement a pilot slaughter waste anaerobic digestion system with biogas recovery	SG 8	2	O
19. Gradually transition to full cost recovery of both operating and routine capital costs within a period of 5 years	SG6	2	U
20. Establish a micro-enterprise line of credit for CBEs	Credit options are industry best practice; to incentivize	2	O
21. Secure donor support for an arrangement to provide new vehicles to franchisees under a lease-purchase agreement	To improve enabling environment to meet overall objectives	2	O
22. Establish financial incentives for industries that change feedstock feeding systems and manufacturing processes to enable increased use of recyclables	SG8	2	O
23. On a national level, require all large business establishments to implement waste reduction and recycling and submit their plans and programs	SG6	2	O
24. Procurement provisions for waste service providers that require inclusion of women, disabled, and other socially disadvantaged groups	Not linked to a specific strategy; overarching and Human Resources (HR) Bound	2	O
25. Micro-enterprise credit options and training for women and other Social Inclusion and Gender Mainstreaming (SIGM) entrepreneurs	Not linked to a specific strategy; overarching and Human Resources (HR) Bound	2	O
26. Private sector involvement outsourcing that seeks to balance the type and size of private companies and informal sector actors	Not linked to a specific strategy; industry best practice	2	O

**Table 4: Key Strategies determined under Priority 3**

Strategic Action (Strategies)	Strategic Goal (SG) contribution	Time frame Priority 3: 8 years	Champion: U=Utility O=Other
1. Create government procurement preferences for materials and goods which have recycled content	To be carried out at national level by the Ministry of Local Government and Rural Development	3	0
2. Develop incentives for bio fertilizer companies	To be carried out at national level by the Ministry of Local Government and Rural Development	3	0

**Table 5: Other Key Strategies determined**

Strategic Action (Strategies)	Strategic Goal (SG) contribution	Time frame Priority 3: 8 years	Champion: U=Utility O=Other
1. Continue with charging subscription for services within exclusive zones	Standard industry best practice	-	-
2. Continue with user charges for door-to-door subscription services, subsidies for households in peri-urban areas, and tipping fees at disposal sites	Standard industry best practice	-	-
3. Set subscription performance targets for all households and commercial establishments regarding service delivery and collection of service fees	Standard industry best practice	-	U
4. Provide cross-subsidy to the household services and disposal activities	Only when determined as needed; specific protocols to be developed as needed	-	U

# 04

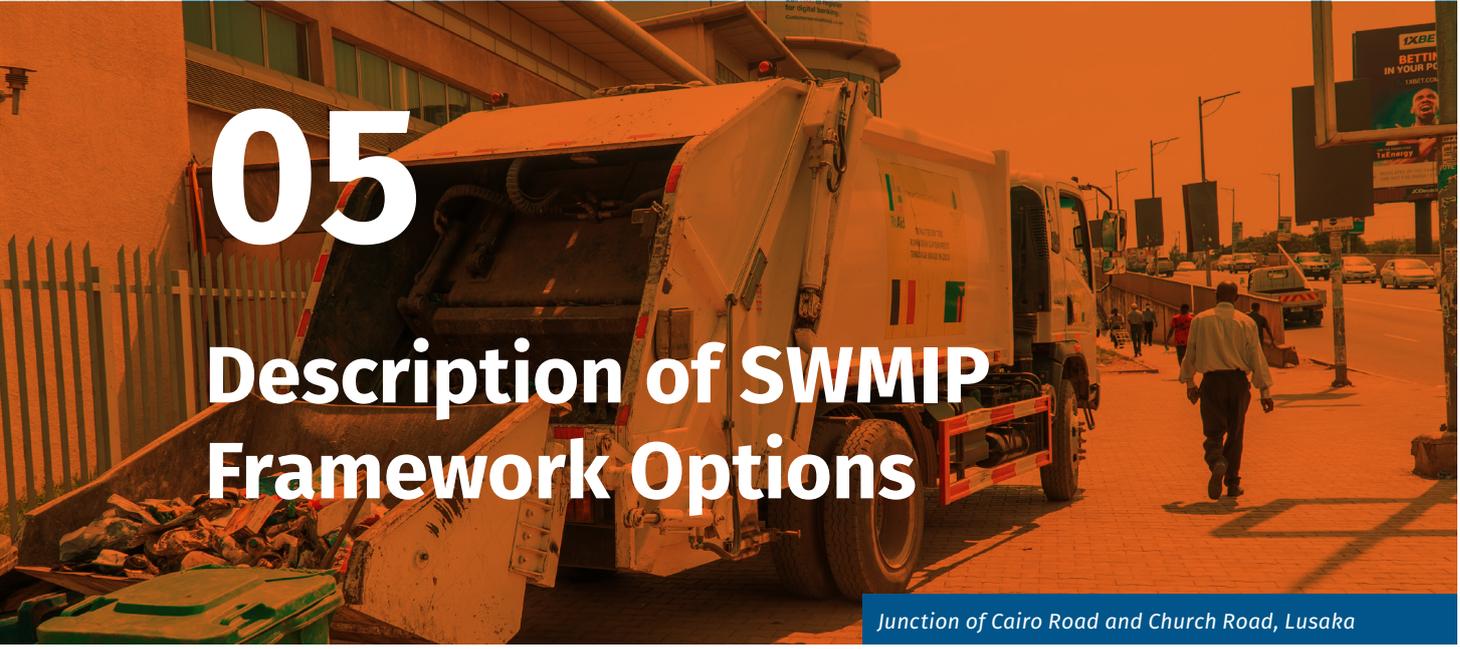
## Guiding Principles

The SWMIP embraces several Guiding Principles while addressing the SGs. Guiding Principles will align with national laws and guidelines, established international protocols, and industry best practices during all planning, design, and procurement activities. Some of the national laws that will be considered at implementation include the Constitution of Zambia (2016), the National Gender Policy and National Gender Strategic Plan (2014-2016), Persons with Disabilities Act (No. 6 of 2012) and The Environmental Impact Assessment Regulations (SI. 28, 1997). The Guiding Principles include, in no particular order, the following:

- i. Gender inclusion to help offset the large poverty incidence on women by opening up meaningful economic opportunities as outlined in the LCC Social Inclusion and Gender Policy of 2018.
- ii. Social inclusion to address potential livelihood and resettlement issues, including income and employment generation.
- iii. Financial sustainability by arranging contracts that are cost-effective and enable depreciation matched to contract durations.
- iv. Cross-subsidized tariff structures that address affordability and acknowledge that service to the poor is often costlier per tonne than service to the rich.
- v. Competition fostered by private sector arrangements that have equitable comparable conditions among various private entities.
- vi. Community development in the low income areas through engaging CBEs in waste collection and cleaning services.
- vii. Consideration of holistic life cycle costing by considering long-term energy and emissions externalities.
- viii. Integrated waste management which determines the most cost-effective total system from collection through disposal.
- ix. Environmental sustainability which examines the use of natural resources as part of overall cost-effectiveness.
- x. Occupational and environmental health safety of all SWM systems, related to all workers and surrounding communities with SWM facilities.
- xi. Governance issues of decentralisation, transparency, and accountability in service delivery.
- xii. Eliminate potential corruption and political interference.
- xiii. Emergency preparedness to handle collection and disposal of disaster related waste.
- xiv. Public engagement at key stages of planning and decision making, particularly with respect to new facility siting and development, new services and related costs.
- xv. Performance monitoring and controls of collection vehicles and effective record keeping at unloading points.
- xvi. Public education to develop awareness on waste minimisation, recycling, and the need to support good solid waste collection and disposal practices.
- xvii. ICT optimisation to enable vehicle and service provider monitoring, and facilitate efficient record keeping and management of information systems.

## 05

## Description of SWMIP Framework Options



Junction of Cairo Road and Church Road, Lusaka

### 5.1 The Approach Used

**Solid waste management is a unique sector. To develop appropriate and cost-effective systems that are sustainable requires at least as much attention to the enabling framework as to the technical systems. For example:**

- i. To be successful, public cooperation is a key factor in SWM. Therefore, a clean city is dependent on people putting out their waste at the time and in the manner that is fully supportive of the technical collection system. This requires education, regulation, inspection, and enforcement.
- ii. Women and children have the most important roles for cooperation, as they are often the household members that perform the task of waste storage, segregation of recyclables, and waste discharge to the collection point. Optimising their cooperation commonly requires education and incentives, as well as some special design that is attentive to their strength, height, and schedules.
- iii. Solid waste collection and cleaning typically has much higher operating costs for personnel and consumables than it does for equipment and other infrastructure. Therefore, a clean city is dependent on a regular base of revenues to cover these high costs.
- iv. Service costs to residents in peri-urban areas are higher than service costs to residents in urban areas. This is due to the difficulty of aggregating smaller quantities of waste in poorer areas, inability of the poor to afford good waste containers that ease the process of waste collection, and very poor road access conditions that are prone to flooding. Therefore, the polluter pays principle is not directly applicable when delivering services to peri-urban areas. This consideration is important as in Lusaka District, more people live in peri-urban areas compared to urban areas.
- v. Much of the solid waste service provided is a public good. Only the collection of waste from door-to-door is a private good. Communal collection of waste, public area cleaning activities, drainage cleaning activities, and environmentally safe disposal are all public goods. Thus, there is great difficulty in lower income countries such as Zambia to achieve adequate cost recovery. Viability gap financing is considered appropriate and necessary for full service delivery. Economic instruments need to be optimised to encourage actions that can help augment revenues from the business community, as well as to obtain cooperative and sustainable behaviour from all residents and establishments.

The SWMIP gives much attention to the enabling framework aspects as it does to the technical aspects of the plan. The SWMIP presents a recommended five year plan (2022-2026).

## 5.2 SWMIP Enabling Framework

The enabling frameworks presented in this SWMIP are supportive arrangements through the following categories of activities:

- i. Technical
- ii. Legal/Regulatory
- iii. Institutional
- iv. Financial
- v. Economic
- vi. Social Inclusion and
- vii. Private Sector Participation



Enabling frameworks provide support systems that ensure solid waste technical activities are successful and sustainable. They motivate competition among service providers, build public cooperation, stimulate market demand, enforce environmental standards, provide equitable opportunities, minimise investment risks, and encourage private sector investment. The frameworks lay out laws, regulations, policies, institutional structures, enforcement systems, social requirements, financial systems, cost recovery mechanisms, market incentives, private sector incentives and other support systems. Through these frameworks, an approach to capacity building at every level of government is implemented.

Even without any efforts by the government to focus on investing in new technical systems, government efforts to build strong enabling frameworks could gradually lead to solid waste management improvements. Through creating clear enabling framework improvements, the technical systems will improve, albeit more gradually than a combination of technical and enabling framework investments would manifest.

The SWMIP examined three levels under each category of activity; the three levels present options for Zambia's stakeholders and decision makers to consider in choosing a way forward. Each of the three levels provides a different level of effort, complexity, cost and achievement toward upgrading Zambia's solid waste management system.

### TO SUMMARISE, THE 3 LEVELS ARE DESCRIBED AS FOLLOWS:

**LEVEL 1** Options provides a minimum amount of technical activity and enabling framework activity, which involve some improvement over current systems, but with minimum change and expense.

**LEVEL 2** Options provides a medium amount of technical activity and enabling framework activity, for a modest level of improvement and expense.

**LEVEL 3** Options provides a maximum amount of technical activity and enabling framework activity, for optimum improvement and greater expense. The three levels under each category are presented in table 6.

**Table 6: Enabling Framework**

<b>TECHNICAL OPTIONS</b>	
<b>LEVEL ONE</b>	<ol style="list-style-type: none"> <li>1. Improve the LCC general concept of subscription for services within exclusive zones and Waste Management District (WMD) of Community Based Enterprises (CBEs) and franchisees respectively. Provide long-term contractual agreements to existing and new service providers and establish improved precise annual targets for increasing the portion of households and commercial establishments subscribing.</li> <li>2. Implement upgraded disposal at Chunga dumpsite to control interim landfill for several years and then move to a new site thereafter.</li> <li>3. Require all service providers to provide a detailed quarterly report on their customers, services, revenues and achievement of performance targets.</li> </ol>
<b>LEVEL TWO</b>	<p><b>Same as Level 1 Technical Arrangements, with the addition of the following:</b></p> <ol style="list-style-type: none"> <li>1. Add general cleaning to each CBE and franchise agreements developed in Level 1.</li> <li>2. Increase sorting of waste at source and implement zonal recycling efforts in at least half of the CBEs and franchise Zones and WMDs respectively, working either directly with the collection service providers or with a subcontractor of their choice. Establish annual targets for improving and increasing recycling.</li> <li>3. Establish zonal special waste license open competition systems for collection of construction/demolition debris, landscaping/green waste, and livestock bedding and manure waste.</li> <li>4. Implement transfer stations that are strategically placed in Lusaka, relative to the selected site for the new sanitary landfill, so that travel for a collection vehicle is normally no more than 45 minutes one way before discharging.</li> <li>5. Implement separate disposal areas for bulky and inert items that are safe to discharge without strict sanitary landfill procedures, such as construction/demolition debris, which can be done directly by the CBEs and franchises, or as part of a licensed service provider's requirements for this special waste.</li> <li>6. Continue with the process of looking for land for a new landfill while in parallel implementing measures to maintain and improve Chunga landfill.</li> </ol>
<b>LEVEL THREE</b>	<p><b>Same as Level 2 Technical Arrangements, with the addition of the following:</b></p> <ol style="list-style-type: none"> <li>1. Implement Level 1 pre-processing at the new sanitary landfill to reduce the putrescible organics quickly before putting the pre-processed waste in the sanitary landfill. This pre-process will involve aerated biodegradation for a few weeks before landfilling the partially decomposed waste, in order to reduce odours, vectors, leachate and biogases generated by the landfill.</li> <li>2. Develop a private sector arrangement to provide Level 2 pre-processing of biodegradables to include sorting, screening and other mechanical technology to recover recyclables and potentially produce RDF where markets are adequate to cover costs.</li> <li>3. Implement a pilot construction/demolition debris reuse program. Develop market demand and pricing structures. After five years, assess the market potential for replication and present all costs and revenues in a report to the government.</li> <li>4. Implement a pilot slaughter waste anaerobic digestion system with biogas recovery. Develop market demand and pricing structures. After five years, assess the market potential for replication and present all costs and revenues in a report to the government.</li> </ol>

**LEGAL/REGULATORY OPTIONS**

<b>LEVEL ONE</b>	<ol style="list-style-type: none"> <li>1. Improve public awareness of the existing laws, regulations and policies to 80 percent by 2026 i.e., police, schools, community ambassadors and civic leaders, public places etc.</li> <li>2. Establish a by-law that will enable accountability and tariff bundling to support SWM systems.</li> <li>3. Establish a by-law that will support and rationalise collection disposal operations that meet health and environmental standards.</li> <li>4. Develop a by-law that shall support the establishment of policies at work places, schools, religious organisations etc. to raise public awareness, influence behaviour change and raise public participation.</li> <li>5. Develop a legal framework for procurement and contract management.</li> <li>6. Ensure all legal issues that conflict with the Solid Waste Regulation and Management Act of 2018 are addressed.</li> <li>7. Lobby for incentives to encourage investments in SWM equipment and maintenance.</li> </ol>
<b>LEVEL TWO</b>	<p><b>Same as above for Level 1 Arrangements, plus:</b></p> <ol style="list-style-type: none"> <li>1. Establish a corporate approach to setting up accounting, customer relations, data development, and financial management systems for full waste management.</li> <li>2. Establish corporate social and environmental responsibility reporting.</li> <li>3. Develop the legal framework for a well-structured ethical framework for procurement and contract management.</li> <li>4. Require transparent auditable annual accounts on all activities conducted under the corporate approach to waste management.</li> <li>5. Set up the legal responsibility framework required to safeguard investments provided for SWM and conduct routine preventive maintenance and renewal of assets.</li> <li>6. Legally support the concept of rationalised cost-effective collection and disposal operations that meet all health and environmental standards.</li> <li>7. Legally establish the transparency and requirements for public awareness, public participation, and stakeholder involvement.</li> </ol>
<b>LEVEL THREE</b>	<p><b>Same as above for Level 2 Arrangements, plus:</b></p> <ol style="list-style-type: none"> <li>1. Address existing gaps and duplication in current laws and regulations.</li> </ol>

**INSTITUTIONAL OPTIONS**

<b>LEVEL ONE</b>	<ol style="list-style-type: none"> <li>1. Clarify roles and responsibilities of various agencies involved in SWM where there might be confusion.</li> </ol>
<b>LEVEL TWO</b>	<ol style="list-style-type: none"> <li>1. Upgrade the new separate entity, as needed, to be a corporate structure that is fully transparent, accountable, and sustainable, with annual targets for gradually increasing service provision and cost recovery.</li> <li>2. Establish a national entity to regulate the licensing, tariff structures, and customer relation activities of the SWM entity created for Lusaka and any others created for other local government units.</li> <li>3. Build the capacity of the national MSW regulator to be able to guide local governments in their activities to improve solid waste systems.</li> <li>4. Improve the institutional arrangements of existing environmental and health regulators and mainstream local level structures e.g., WDCs, CBEs etc.</li> <li>5. Provide government budget support to the SWMC and all key regulators to enable successful start-up operations and sustainability, coupled with a precise system of accountability for financial management.</li> </ol>
<b>LEVEL THREE</b>	<ol style="list-style-type: none"> <li>1. Upgrade the solid waste management regulator institutional arrangements to further embrace recycling and resource recovery and to encourage appropriate pilot programs, partnerships, and economic instruments for this purpose.</li> </ol>

**FINANCIAL OPTIONS****LEVEL ONE**

1. Improve the existing LCC concept of having user charges for door-to-door subscription services and migrate towards an efficient and effective tariff bundling mechanism to provide guaranteed funding that would enable providing subsidies to the less privileged. Further, support covering the costs of public good services, such as area cleaning, communal container collection, recycling programs, and improved disposal costs.
2. Improve the existing LCC concept of tipping fees at the disposal site; however, expand charging the tipping fees to all haulers bringing waste into the disposal site.
3. Improve the tariff structure to commercial/industrial establishments, so that it reflects their waste generation, such as number and size of waste containers used. Extend the quantity-based tariff structure to institutional establishments to encourage them to reduce their waste generation.
4. Improve the method of collecting user charges. Improving the current door-to-door fee collection system for open subscription by making it more accountable, including the use of digital receipts.
5. Improve the tracking of payments by digital systems and GPS information, and possibly Radio Frequency Identification Device (RFIDs) on buildings and/or containers.
6. Implement the phasing of government capital investment budgeting and recurrent budgeting to be in line with the SWMIP schedule of activities.
7. Upgrade all weighbridges at locations where collection vehicles unload, such as disposal sites and transfer facilities, ensuring that calibrated weights are assessed for all ingoing and outgoing vehicles and digitally recorded at all times.
8. Develop asset management programs for equipment and facilities with scheduled preventive maintenance and routine inspections of maintenance needs.
9. Develop appropriate accounting systems and provide financial information through regular reporting to customers, management, and government, as appropriate.

**LEVEL TWO**

1. Upgrade financial accounting systems to connect to e-governance objectives and requirements, for standardized reporting on service performance and related costs and revenues, including all necessary computer and software facilities and training for implementation of financial capacity.
2. Upgrade software at all weighbridges to ensure that they provide digital download in real-time and in formats that input into spreadsheets and management information systems to ensure full accounting for services. This includes related to each area of cleaning and waste collection for each service provider.
3. Curtail the open competition service to industry and bring them into the zonal collection service, with cross subsidies from their fees to support the overall collection and disposal system in their local zones.

**LEVEL THREE**

1. Gradually transition to full cost recovery of both operating and routine capital costs within a period of five years for collection, cleansing, transfer and disposal, except for capital grants or donor financing for major new transfer and disposal works that would improve the overall system.
2. Reduce the transition period to full cost recovery to five years.
3. Establish a micro-enterprise line of credit for CBEs to obtain financing to enable investments in their collection equipment and recycling facilities.
4. Secure donor support for an arrangement to provide new vehicles to franchisees under a lease-purchase agreement to mitigate very high commercial interest rates prevalent locally at commercial banks (above 30 percent interest/year with a three-year payback requirement).
5. Seek private sector investment for the resource recovery concessions.

**ECONOMIC OPTIONS****LEVEL ONE**

1. Upgrade the user charge fee structure to homes and establishments in middle to upper income areas, and to industries, by making it as quantity-based as reasonable, so that it creates a disincentive to generate waste.
2. Create an annual recycling award for the CBE and Franchise that collects and sells the most recyclables.
3. Create an award to the industry that uses the highest percentage of its feedstock from recycled wastes collected from local sources.
4. Create a CBE and Clean Waste Management at Constituency and District annual award with criteria for success and provide annual recognition and/or awards, e.g., community grants for cooperative neighbourhoods or external learning opportunities for the service provider.
5. Implement strong sanctions tied to all key SWM regulatory requirements that are not being met and an improved system of enforcement.

**LEVEL TWO**

1. Create financial incentives and risk management options to encourage creation of innovations in special recycling industries, such as recycling concrete and asphalt construction debris into road bed material, recycling tires into tire crumb, and recycling combustible waste into RDF.
2. Develop a by-law to promote institutional procurement preferences for materials and goods which have recycled content, such as office paper with a preference for recycled paper content, geomembranes with recycled plastic content, asphalt paving with recycled crush glass content, road bed material with recycled concrete demolition debris content, computer and printing equipment with rebuilt recycled components etc.
3. Create annual clean industry and clean commercial establishment awards with clear criteria for success.

**LEVEL THREE**

1. Create a special electricity grid pricing structure that recognizes the value of waste for renewable energy and provides adequate incentive to reduce the risk of investment in waste to energy through biogas, syngas, synfuel, incineration to steam/electricity, and RDF production from waste.
2. Create special financial incentives for industries to develop processing changes that enable them to use recyclables as feedstock in their manufacturing.
3. Develop incentives for chemical fertilizer companies to include compost made from treated landscaping green waste, livestock bedding, and manure as part of their product line.
4. On a national level, require all large business establishments to implement waste reduction and recycling, and submit their plans and programs to do so as part of requesting their annual business license renewal.

**SOCIAL INCLUSION OPTIONS**

<b>LEVEL ONE</b>	<ol style="list-style-type: none"> <li>1. Include SIGM specialists and managers with sufficient responsibility and authority within the structure of the solid waste management entity, to make a difference in corporate behaviour and decision making.</li> <li>2. Provide public access to the solid waste database, enabling the public to have a base for monitoring and participating in the national program to upgrade SWM. This is most easily done by developing a good website that is well populated with reports, data and plans. Further, promote greater public inclusion in SWM by holding quarterly public meetings.</li> <li>3. Provide public education and awareness of solid waste issues. Seek public cooperation on improving SWM and minimizing its environmental impacts.</li> <li>4. Determine the ability and willingness of the public to participate in solid waste service, by properly separating waste, carrying it to collection points, recycling, and paying service fees on time.</li> <li>5. Require a process of public participation in the review of plans while options still are being considered, and provide responses to public questions and comments on the options, followed by workshops with key stakeholders.</li> <li>6. Ensure adequate community consultation during introduction of new projects, and assess and mitigate all possible social impacts of affected parties.</li> <li>7. Increase opportunities for all socially excluded groups in society to be included in the employment potential of the new solid waste facilities and systems, and strive to involve them in a meaningful way with proper income potential.</li> <li>8. Seek to minimise resettlement in the siting of new facilities and assure proper adequate compensation for any losses in agriculture, livelihood, or housing.</li> </ol>
<b>LEVEL TWO</b>	<ol style="list-style-type: none"> <li>1. Pilot programs to create community acceptance and organisations for socially excluded groups that have specific roles in the solid waste system. This includes promoting opportunities to earn income, particularly in the lower income neighbourhoods.</li> <li>2. Pilot programs to conduct public awareness for children; use artists and teachers to develop materials to stimulate environmental consciousness and willingness to reduce littering and improve recycling.</li> <li>3. Perform a baseline and annual social surveys on customer satisfaction with solid waste improvements and costs; include special options for social inclusion.</li> <li>4. Ensure procurement guidelines that consider the inclusion of women, disabled, and members of other socially disadvantaged groups at every level of the SWM process. This includes considering the make-up of proposed teams during tender evaluations of potential waste service providers. Ensure SWM service provider contracts include SIGM as an integral part of their performance evaluation process, with progress on SIGM reported on, audited, and evaluated against established indicators.</li> </ol>
<b>LEVEL THREE</b>	<ol style="list-style-type: none"> <li>1. Licensing and contracting requirements that compel contractors and licensed service providers to work in a collaborative manner and to involve existing waste pickers and recyclers in their service activities.</li> <li>2. Micro-enterprise credit options and training for socially disadvantaged groups and other SIGM entrepreneurs seeking to implement solid waste recycling or small-scale processing systems in peri-urban areas.</li> <li>3. Private sector involvement outsourcing that seeks to balance the type and size of private companies and informal sector actors that support the system with services, as this achieves the highest degree of social inclusion and also optimises competitive forces.</li> </ol>

**PRIVATE SECTOR PARTICIPATION OPTIONS**

<b>LEVEL ONE</b>	<ol style="list-style-type: none"> <li>1. Establish procurement guidance on PSP options for conducting solid waste operations and implementing facilities.</li> <li>2. Develop improved sample licensing, franchise and contract templates for use in solid waste service provider procurements and agreements.</li> <li>3. Establish three-year performance-based contractual agreements for CBEs and franchises in accordance with the Waste Management Act.</li> <li>4. Establish licensing criteria and licensing systems for special waste so that only qualified private firms are developed and pre-approved for potential solid waste work, and that they meet the same type of reporting and auditing required of the CBEs and franchises.</li> <li>5. Require that all waste generators work only with approved service providers or risk being sanctioned.</li> </ol>
<b>LEVEL TWO</b>	<ol style="list-style-type: none"> <li>1. Create licensing arrangements for recyclables that support CBE and franchise involvement in zonal recycling activities. Curtail the open competition of recycling across the zonal boundaries for collection service providers.</li> <li>2. Develop incentives for private sector investment in solid waste systems, such as utility access, expedited permit issuance, customs free equipment imports, accelerated depreciation, income tax reduction, and/or grants to cover design costs.</li> </ol>
<b>LEVEL THREE</b>	<ol style="list-style-type: none"> <li>1. Design, build and develop operational procedures for zonal concessions that would implement safe treatment of non-hazardous special wastes, abattoir waste, tires, construction/demolition debris, and green wastes.</li> <li>2. Develop market demand for recyclables and recovered resources through special pricing policies and through preferential government procurement actions.</li> </ol>

# 06

## The Recommended Framework

**The SWMIP provides stakeholders with a clear description of the options and a series of levels in each option for implementation. The simple format of three levels provides a viable basis for commencing a dialogue about what choices are available and developing a pathway to improving SWM in Lusaka City.**

### 6.1 The Evaluation Process

Financial sustainability is a key criterion for selecting the path forward. However, financial sustainability does not measure the large potential of other sustainability criteria, such as externalities that have no related direct costs. Therefore, while necessary, financial sustainability alone is not sufficient. To ensure a holistic approach to sustainability, the evaluation criteria adopted in the SWMIP is outlined below:

#### Financial Criteria:

- Capital investment costs and their potential for private sector investment or donor financing;
- Operationalised capital and recurrent costs and their affordability relative to potential cost recovery mechanisms;
- Reliability of financial systems that enable needed cash flow; and
- Market demand revenue potential for recyclables and/or resource recovery processing of by-products.

#### Other Sustainability Criteria:

- Governance principles of accountability, transparency, competition and social inclusion;
- Livelihood and skills capacity development;
- Natural resource conservation through landfill minimization, recycling and resource recovery, and energy efficient operations;
- Environmental quality protection through facility design and operation standards, as well as control of emissions;
- Public health protection through adequate waste collection and management of harmful wastes;

- Flood control through maintenance of clean open drains;
- Socio-cultural preferences through appropriate service arrangements, and affordability considerations; and
- Livelihood opportunities and support to domestic economic and poverty alleviation objectives.

### 6.2 Selection of The Preferred Options for the SWMIP

A combination of Level 2 for Technical options and Level 3 for each of the other enabling framework options is recommended. It is believed that a strong Level 3 enabling framework will lead to the most efficient and sustainable systems, while focusing technically on a modest set of appropriate Level 2 technical actions is considered cost-effective. A comprehensive enabling framework must provide the setting of regulatory requirements, institutional accountability, and market incentives created by economic instruments to encourage both donor and private sector investments and capacity-building commitments. For example, the preferred disposal option is sanitary landfill because it is the most cost-effective option, costing only about 60 percent of composting and only about 20 percent of waste-to-energy. Those higher cost disposal options are viable only after a strong market demand is created through economic instruments, such as market incentives to incorporate compost as part of the fertilizer and landscaping materials offered through government programs, or special renewable energy prices for electricity derived from waste incineration. The recommended activities in each category are presented in Table 6.

**Table 7: Recommended Enabling Framework Options**

<b>TECHNICAL OPTIONS</b>	
<b>LEVEL TWO</b>	<ol style="list-style-type: none"> <li>1. Add general cleaning to each CBE and franchise agreements developed in Level 1.</li> <li>2. Increase sorting of waste at source and implement zonal recycling efforts in at least half of the CBEs and franchisee Zones and WMDs respectively, working either directly with the collection service providers or with a subcontractor of their choice. Establish annual targets for improving and increasing recycling.</li> <li>3. Establish zonal special waste license open competition systems for collection of construction/demolition debris, landscaping/green waste, and livestock bedding and manure waste.</li> <li>4. Implement transfer stations that are strategically placed in Lusaka, relative to the selected site for the new sanitary landfill, so that travel for a collection vehicle is normally no more than 45 minutes one way before discharging.</li> <li>5. Implement separate disposal areas for bulky and inert items that are safe to discharge without strict sanitary landfill procedures, such as construction/demolition debris, which can be done directly by the CBEs and franchises, or as part of a licensed service provider's requirements for this special waste.</li> <li>6. Continue with the process of looking for land for a new landfill while in the meantime implement measures to maintain and improve Chunga landfill.</li> </ol>
<b>LEGAL/REGULATORY OPTIONS</b>	
<b>LEVEL THREE</b>	<ol style="list-style-type: none"> <li>1. Improve public awareness of the existing laws, regulations and policies to 80 percent by 2026 i.e., police, schools, community ambassadors and civic leaders, public places etc.</li> <li>2. Establish a by-law that will enable accountability and tariff bundling to support SWM systems.</li> <li>3. Establish a by-law that will support and rationalise collection disposal operations that meet health and environmental standards.</li> <li>4. Develop a by-law that shall support the establishment of policies at work places, schools, religious organisations etc. to raise public awareness, influence behaviour change and raise public participation.</li> <li>5. Develop a legal framework for procurement and contract management.</li> <li>6. Ensure all legal issues that conflict with the Solid Waste Regulation and Management Act of 2018 are addressed.</li> <li>7. Lobby for incentives to encourage investments in SWM equipment and maintenance.</li> <li>8. Establish a corporate approach to setting up accounting, customer relations, data development, and financial management systems for full waste management.</li> <li>9. Establish corporate social and environmental responsibility reporting.</li> <li>10. Develop the legal framework for a well-structured ethical framework for procurement and contract management.</li> <li>11. Require transparent auditable annual accounts on all activities conducted under the corporate approach to waste management.</li> <li>12. Set up the legal responsibility framework required to safeguard investments provided for SWM and conduct routine preventive maintenance and renewal of assets.</li> <li>13. Legally support the concept of rationalised cost-effective collection and disposal operations that meet all health and environmental standards.</li> <li>14. Legally establish the transparency and requirements for public awareness, public participation, and stakeholder involvement.</li> <li>15. Address existing gaps and duplication in current laws and regulations.</li> </ol>

**INSTITUTIONAL OPTIONS**

- |                    |   |
|--------------------|---|
| <b>LEVEL THREE</b> | <ol style="list-style-type: none"> <li>1. Upgrade the solid waste management regulator institutional arrangements to further embrace recycling and resource recovery and to encourage appropriate pilot programs, partnerships, and economic instruments for this purpose.</li> </ol> |
|--------------------|---|

**FINANCIAL OPTIONS**

- |                    |  |
|--------------------|--|
| <b>LEVEL THREE</b> | <ol style="list-style-type: none"> <li>1. Gradually transition to full cost recovery of both operating and routine capital costs within a period of five years for collection, cleansing, transfer and disposal, except for capital grants or donor financing for major new transfer and disposal works that would improve the overall system.</li> <li>2. Reduce the transition period to full cost recovery to five years.</li> <li>3. Establish a micro-enterprise line of credit for CBEs to obtain financing to enable investments in their collection equipment and recycling facilities.</li> <li>4. Secure donor support for an arrangement to provide new vehicles to franchisees under a lease-purchase agreement, because of very high commercial interest rates prevalent locally at commercial banks (above 30 percent interest/year with a 3-year payback requirement).</li> <li>5. Seek private sector investment for the resource recovery concessions.</li> </ol> |
|--------------------|--|

**ECONOMIC OPTIONS**

- |                    |   |
|--------------------|---|
| <b>LEVEL THREE</b> | <ol style="list-style-type: none"> <li>1. Create a special electricity grid pricing structure that recognizes the value of waste for renewable energy and provides adequate incentive to reduce the risk of investment in waste to energy through biogas, syngas, synfuel, incineration to steam/electricity, and RDF production from waste.</li> <li>2. Create special financial incentives for industries to develop processing changes that enable them to use recyclables as feedstock in their manufacturing.</li> <li>3. Develop incentives for the chemical fertilizer companies to include compost made from treated landscaping green waste, livestock bedding and manure as part of their product line.</li> <li>4. On a national level, require all large business establishments to implement waste reduction and recycling, and submit their plans and programs to do so as part of requesting their annual business license renewal.</li> </ol> |
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**SOCIAL INCLUSION OPTIONS**

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|--------------------|--|
| <b>LEVEL THREE</b> | <ol style="list-style-type: none"> <li>1. Licensing and contracting requirements that compel contractors and licensed service providers to work in a collaborative manner to involve existing waste pickers and recyclers in their service activities.</li> <li>2. Micro-enterprise credit options and training for socially disadvantaged groups and other SIGM entrepreneurs seeking to implement solid waste recycling or small-scale processing systems in peri-urban areas.</li> <li>3. Private sector involvement outsourcing that seeks to balance the type and size of private companies and informal sector actors that support the system with services, as this achieves the highest degree of social inclusion and also optimises competitive forces.</li> </ol> |
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**PRIVATE SECTOR PARTICIPATION OPTIONS**

- |                    |   |
|--------------------|---|
| <b>LEVEL THREE</b> | <ol style="list-style-type: none"> <li>1. Design, build and develop operational procedures for zonal concessions that would implement safe treatment of non-hazardous special wastes, abattoir waste, tires, construction/demolition debris, and green wastes.</li> <li>2. Develop market demand for recyclables and recovered resources through special pricing policies and through preferential government procurement actions.</li> </ol> |
|--------------------|---|

### 6.3 Quantities and Service Level Targets

The following estimates are a summary of current and proposed quantities and service delivery level targets. As evident below, there are both a growth in population and a growth in waste generation rate per capita which will drive the MSW quantities generated. The five year SWMIP is based on achieving a strategic goal of 80 percent waste being gathered by a combination of methods and arriving at safe disposal by the end of the five years. The following estimates of service levels are based on subscription quantities in early 2018 and clean-up quantities done regularly in 2017<sup>1</sup>.

**Table 8: Projected quantities and service level targets for the recommended Framework Options**

Lusaka District year service plan	2018 Baseline year	Preparation year SWMIP 2019	SWMIP 2022 - 2026
Population city-wide	2,526,102	2,627,716	4,010,887
Average waste generation kg/cap/day	0.51	0.52	0.64
MSW tonnes/year generated city-wide	479,632	505,508	940,900
MSW tonnes/day generated city-wide	1,314	1,385	2,578
CBE door-to-door collection service	10.7%	11.9%	24.0%
WMD door-to-door collection service	17.5%	18.6%	29.0%
Large waste generators bringing own waste	3.6%	3.7%	5.0%
LCC drain cleaning (engineering dept.)	0.8%	1.0%	3.0%
LCC bus station and markets (housing department)	5.3%	5.3%	6.0%
Zambia National Service cleaning	2.3%	2.1%	0%
Voluntary cleaning by others	10.4%	9.9%	5.0%
Total of MSW arriving at Disposal Sites	50.5%	53.2%	80.0%
Recycled from source and the landfill	0.7%	1.3%	8.0%
Unmanaged wastes	49.5%	46.8%	20.0%

### 6.4 Cost of The Recommended Framework Options

For the activities recommended under this SWMIP, the following estimated costs are anticipated. Most of these activities would be done by government agencies supported by teams of consultants. Indicative costs for LCC/ SWMC and related government entities to create and implement the improvements using the recommended framework are estimated as follows:

Detailed costs will be developed at implementation.

**Figure 4. Cost of The Recommended Framework**



1. This does not include those clean-ups done during the intense months of the cholera epidemic in 2017/2018.

## 6.5 SWMIP Key Performance Indicators

There's no question that key performance indicators (KPIs) are needed to help drive strategic and operational improvements. KPIs are absolutely essential for organisations to present performance information at all levels of the institution. A KPI is a measurable value that demonstrates how effectively SWMIP will achieve its objectives. The SWMIP will use KPIs to evaluate its success in reaching targets. The SWMIP shall apply the following KPIs to measure its progress:

- i. Average cost of refuse collection service per residential property and non-residential property in peri-urban areas and laid-out areas.
- ii. Average cost of refuse collection service per capita in peri-urban areas and laid-out areas.
- iii. Average kg of residential waste recycled per capita and of non-residential waste recycled per employee.
- iv. Percentage of total MSW waste collected which is recycled.
- v. Kg of MSW sent to landfill per annum.
- vi. Missed collections per tonne in each zone or WMD.
- vii. Litres of fuel used annually in refuse collection vehicles per tonne of waste and distance of transport, or per capita.
- viii. Contractors' performance against contractual obligations.
- ix. Customer complaints per 1000 residential properties and per 100 non-residential properties.
- x. Collection cost recovery.
- xi. Disposal cost recovery.
- xii. Revenue collection efficiency.
- xiii. Occupational and community health and safety incidents.
- xiv. Mitigation of anticipated adverse impacts, including livelihood impacts to waste pickers and LCC staff.
- xv. Public perception as evidenced in surveys of public satisfaction with service delivery.

Baseline, midline and endline evaluations will need to be conducted to measure progress when implementation commences.

# Conclusion

The Solid Waste Management Improvement Plan (SWMIP) has been developed to provide a 5 year plan for the improvement of solid waste management for the Greater City of Lusaka, from 2022 to 2026. It seeks to achieve its objectives within the implementation period with support from residents, the community, central government and cooperating partners.



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# Appendix

## 1 CONTRIBUTION OF THE SWMIP TO SDGs

SDG	SWIMP Contribution
<b>SDG 1</b> End poverty in all its forms everywhere	<ul style="list-style-type: none"> <li>■ Increase economic opportunities in the waste value chains; contribute to jobs, livelihood improvement, and business development</li> <li>■ Contribute to a cleaner, greener, and healthy environment</li> </ul>
<b>SDG 2</b> End hunger, achieve food security and improved nutrition and promote sustainable agriculture	<ul style="list-style-type: none"> <li>■ Reduce vulnerability and exposure of marginalised groups to floods due to drainages blocked by waste</li> <li>■ Contribute to the maintenance of ecosystems, protection of soil quality and strengthened capacity for climate change adaptation</li> </ul>
<b>SDG 3</b> Ensure healthy lives and promote well-being for all at all ages	<ul style="list-style-type: none"> <li>■ Contribute to the reduction of illnesses from contamination and pollution due to the safe disposal of waste</li> <li>■ Contribute to a clean, green, and healthy living environment</li> </ul>
<b>SDG 4</b> Ensure inclusive and equitable quality education and promote life-long learning opportunities for all	<ul style="list-style-type: none"> <li>■ Contribute to a safe, clean, green, and healthy environment for conducive learning in schools and communities</li> <li>■ Support improved access to education through increased economic opportunities for households and income derived from participation in waste value chains to support access to education</li> <li>■ Increased community empowerment and ability to lever education and awareness for advocacy</li> </ul>
<b>SDG 5</b> Achieve gender equality and empower all women and girls	<ul style="list-style-type: none"> <li>■ Increased economic opportunities for women in waste value chains</li> <li>■ Increased awareness among community members on the Human Rights Based Approach and the importance of inclusiveness, accountability, and empowerment</li> <li>■ Increased opportunities for women to effectively participate in leadership &amp; decision-making positions in community structures</li> </ul>
<b>SDG 6</b> Ensure availability and sustainable management of water and sanitation for all	<ul style="list-style-type: none"> <li>■ Improve water quality by reducing pollution, eliminating dumping, and minimizing release of hazardous chemicals and materials</li> <li>■ Promote principles of a circular economy and reduce solid waste threats to sanitation systems</li> <li>■ Contribute to the protection of water related ecosystems</li> <li>■ Support and strengthen the participation of local communities in improving sanitation management through the waste value chains and working with WDC's</li> </ul>
<b>SDG 7</b> Ensure access to affordable, reliable, sustainable, and modern energy for all	<ul style="list-style-type: none"> <li>■ Promote waste to energy technologies, especially for industry, as part of circular economy principles creating economic opportunities in the waste value chain</li> </ul>
<b>SDG 8</b> Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all	<ul style="list-style-type: none"> <li>■ Create business opportunities in waste value chains, including Creating Shared Value (CSV) models with big businesses and communities</li> <li>■ Promote entrepreneurship, job creation and livelihoods, creativity and innovation in management of waste, especially amongst youth and women Facilitate formalization and growth of micro-, small- and medium-sized enterprises in waste value chains</li> </ul>

SDG	SWIMP Contribution
<p><b>SDG 9</b></p> <p>Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation</p>	<ul style="list-style-type: none"> <li>■ Develop climate proof solid waste management infrastructure</li> <li>■ Increase access to financial services targeted to small-scale industries, community based enterprises (CBEs) and other small businesses working in waste value chains and related markets</li> </ul>
<p><b>SDG 10</b></p> <p>Reduce inequality within and among countries</p>	<ul style="list-style-type: none"> <li>■ Effectively implement LCC resolution adopting the Human Rights Based Approach deepening empowerment, non-discrimination, and accountability</li> <li>■ Effectively implement LCC's Social Inclusion and Gender Policy</li> <li>■ Strengthen local governance through empowering WDCs and improving Local Area Planning to increase the control and prevention of uncondusive waste generation and disposal practices</li> </ul>
<p><b>SDG 11</b></p> <p>Make cities and human settlements inclusive, safe, resilient, and sustainable</p>	<ul style="list-style-type: none"> <li>■ Reduce environmental impact of waste on the living conditions of people, especially the most vulnerable (women, children, persons with disabilities and the poor)</li> <li>■ Contribute to a cleaner, greener, and healthy environment for enhanced human development</li> <li>■ Promote principles of circular economy for resource efficiency and city resilience</li> <li>■ Increase awareness on the link between waste management and local governance in achieving a sustainable healthy city</li> </ul>
<p><b>SDG 12</b></p> <p>Ensure sustainable consumption and production patterns</p>	<ul style="list-style-type: none"> <li>■ Promote principles of circular economy and reduce waste generation through prevention, reduction, recycling, and reuse</li> <li>■ Increased awareness on economic potential in waste value chains amongst communities and policy makers</li> </ul>
<p><b>SDG 13</b></p> <p>Take urgent action to combat climate change and its impacts</p>	<ul style="list-style-type: none"> <li>■ Strengthen adaptive capacity at local level through contribution to improved local governance</li> <li>■ Reduce emission of greenhouse gases (GHG) from waste through effective waste management practices</li> <li>■ Disaster risk reduction (floods and epidemics) through inclusive, effective, and efficient management of waste</li> <li>■ Increase awareness on role of waste in climate change mitigation and adaptation</li> </ul>
<p><b>SDG 14</b></p> <p>Conserve and sustainably use the oceans, seas, and marine resources for sustainable development</p>	<ul style="list-style-type: none"> <li>■ Reduce pollution of water bodies by waste to prevent it from ending up in and polluting oceans and seas</li> <li>■ Increase awareness on the link between land-based waste management and the health of oceans and seas</li> </ul>

SDG	SWIMP Contribution
<p><b>SDG 15</b></p> <p>Protect, restore, and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss</p>	<ul style="list-style-type: none"> <li>■ Contribute to the protection of ecosystems through reduced levels of waste polluting the environment</li> <li>■ Contribute to restoration of degraded land and soil through the removal of waste pollutants from the environment</li> <li>■ Increase awareness on the link between integrated planning, improved local governance, and waste management in maintaining healthy terrestrial ecosystems</li> </ul>
<p><b>SDG 16</b></p> <p>Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable, and inclusive institutions at all levels</p>	<ul style="list-style-type: none"> <li>■ Contribute to implementation of the Human Rights Based Approach deepening empowerment, non-discrimination, and accountability</li> <li>■ Promotes inclusive, participatory and representative decision making through the use of different governance structures i.e. WDC's</li> <li>■ Contribute to effective development and implementation of Local Area Plans to underpin community and political support for waste management</li> </ul>
<p><b>SDG 17</b></p> <p>Strengthen the means of implementation and revitalize the global partnership for sustainable development</p>	<ul style="list-style-type: none"> <li>■ Promote multi-stakeholder partnerships and collaboration among private sector, public sector, civil society organisations and community structures. Build collective leadership and mutual accountability, e.g. LCC leadership under Lusaka Water Security Initiative (LuWSI)</li> <li>■ Promote environmentally sound technologies and sustainable financing mechanisms for waste management</li> <li>■ Advocate for policy and institutional coherence and coordination for effective waste management</li> </ul>



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