



**CHONGWE MUNICIPAL COUNCIL**

# **SOLID WASTE MANAGEMENT PLAN -DRAFT**

**Developed By:**

Chongwe Municipal Council  
Public Health Department

**Technical and Financial Support Provided By:**  
UNIDO

**Date:** November, 2020

## TABLE OF CONTENT

TABLE OF CONTENT .....	i
LIST OF TABLES.....	iii
LIST OF FIGURES.....	iv
ACRONYMS .....	v
FOREWORD.....	vi
ACKNOWLEDGEMENTS.....	viii
EXECUTIVE SUMMARY .....	ix
1.0 INTRODUCTION TO THE SOLID WASTE MANAGEMENT PLAN.....	1
1.1 Background .....	1
1.2 Problem Statement.....	1
1.3 The Solid Waste Management Plan.....	3
1.4 Municipality Overview .....	4
1.5 Legal Framework.....	6
1.5.1 Policies .....	7
1.5.2 National Legislation.....	8
1.6 Objectives.....	9
1.6.1 Main Objective .....	9
1.6.2 Specific Objectives .....	9
1.7 Stakeholder Consultation.....	10
2.0 SOLID WASTE MANAGEMENT STATUS IN CHONGWE .....	11
2.1 Solid Waste Assessment and Composition.....	13
2.2 Solid Waste Generation Sources and Streams.....	13
2.3 Amount of Waste and Types.....	17
2.4 Waste Recycling Activities.....	18
2.5 Collection systems .....	19
2.6 Waste management facilities .....	20
2.7 Waste Generation Trends and Projections.....	21
2.8 Organization and financing .....	21

2.9 Socio-economic projections.....	22
2.10 Strengths and Weaknesses in The Current Waste Management System .....	23
3.0 PLANNING, PROJECTIONS, AND ASSESSMENT.....	24
3.1 Assumptions for planning .....	24
3.2 Forecast in Terms of Waste Generation, Total and Per Waste Stream .....	26
3.3 Collection Systems .....	28
3.4 Waste Management Equipment and facilities.....	30
3.5 Proposed Recyclable Collection Centre .....	31
3.6 Stakeholders Relevant To Solid Waste Management and Their Responsibilities.....	33
3.7 Economy and financing.....	34
3.8 Available Capacities and Identified Capacity Gaps .....	35
3.9 Transportation Equipment for Solid Waste .....	37
3.10 Identified Resource Capacity Gaps .....	37
3.11 Expected Benefits of Sound Solid Waste Management .....	37
4.0 IMPLEMENTATION PLAN.....	39
4.1 Implementation Tools.....	39
4.2 Waste Management Implementation Plan 2020 To 2030.....	40
5.0 MONITORING AND EVALUATION ASSESSMENT .....	43
5.1 Recommendations .....	43
APPENDICES .....	44
Appendix A: DATA CAPTURING TOOLS .....	44
Appendix B: PUBLIC PARTICIPATION MINUTES .....	48

## LIST OF TABLES

<b>Table 1: Solid Waste Management Zones .....</b>	<b>15</b>
<b>Table 2: Percentage Distribution for The Waste Streams .....</b>	<b>18</b>
<b>Table 3: Collection Methods in Chongwe District .....</b>	<b>19</b>
<b>Table 4: SWOT Analysis Table .....</b>	<b>23</b>
<b>Table 5: District Population.....</b>	<b>24</b>
<b>Table 6: Projected Waste Generation Figures .....</b>	<b>26</b>
<b>Table 7: Projected Waste Generation Per Stream.....</b>	<b>27</b>
<b>Table 8: Stakeholders and Their Responsibilities .....</b>	<b>33</b>
<b>Table 9: Waste Management Tariffs .....</b>	<b>34</b>
<b>Table 10: Revenue Projections .....</b>	<b>35</b>
<b>Table 11: Public Health Department Establishment for Chongwe Municipality .....</b>	<b>36</b>
<b>Table 12: Objective 1 WMIP .....</b>	<b>40</b>
<b>Table 13: Objective 2 WMIP .....</b>	<b>41</b>
<b>Table 14: Objective 3 WMIP .....</b>	<b>41</b>
<b>Table 15: Objective 4 WMIP .....</b>	<b>42</b>
<b>Table 16: Objective 5 WMIP .....</b>	<b>42</b>
<b>Table 17: Monitoring and Evaluation Template .....</b>	<b>43</b>

## LIST OF FIGURES

Figure 1: Chongwe Location Plan.....	5
Figure 2: Spatial Distribution for Chongwe .....	6
Figure 3: Approximated Amount of Waste Generated Per Stream.....	18
Figure 4: Location Map for Chikwangala Disposal site .....	20
Figure 5: Google Map Site Plan for Chikwangala Disposal site .....	21
Figure 6: Projected Growth Nodes .....	25
Figure 7: 3Rs Waste Management Model.....	29
Figure 8: Site plan for the proposed RCC.....	31

DRAFT

## ACRONYMS

<b>BAT</b>	<b>Best Available Techniques</b>
<b>BET</b>	<b>Best Environmental Practices</b>
<b>CBD</b>	<b>Central Business District</b>
<b>CMC</b>	<b>Chongwe Municipal Council</b>
<b>CO<sub>2</sub></b>	<b>Carbon dioxide</b>
<b>CSO</b>	<b>Central Statistical Office</b>
<b>EIA</b>	<b>Environmental Impact Assessment</b>
<b>EMA</b>	<b>The Environmental Management Act</b>
<b>EPR</b>	<b>Extended Producer Responsibility</b>
<b>GHG</b>	<b>Greenhouse Gas</b>
<b>GRZ</b>	<b>Government of the Republic of Zambia</b>
<b>HH</b>	<b>Household</b>
<b>Kg</b>	<b>Kilogram</b>
<b>KKIA</b>	<b>Kenneth Kaunda International Airport</b>
<b>MFEZ</b>	<b>Multi-Facility Economic Zone</b>
<b>MSME</b>	<b>Micro, Small &amp; Medium scale Enterprises</b>
<b>MWDSEP</b>	<b>Ministry of Water Development Sanitation and Environmental Protection</b>
<b>POPs</b>	<b>Persistent Organic Pollutants</b>
<b>PPE</b>	<b>Personal Protective Equipment</b>
<b>PPP</b>	<b>Public-Private Partnership</b>
<b>PTY</b>	<b>Property(s)</b>
<b>RCC</b>	<b>Recyclable Collection Centre</b>
<b>3Rs</b>	<b>Reduce, Reuse and Recycle</b>
<b>SADC</b>	<b>Southern African Development Community</b>
<b>SI</b>	<b>Statutory Instrument</b>
<b>SUF</b>	<b>Single-User Facility</b>
<b>SWM</b>	<b>Solid Waste Management</b>
<b>SWOT</b>	<b>Strengths, Weaknesses, Opportunities and Threats</b>
<b>tpm</b>	<b>Tonnes Per Month</b>
<b>TPY</b>	<b>Tonnes per Year</b>
<b>UNIDO</b>	<b>United Nations Industrial Development Organization</b>
<b>W2E</b>	<b>Waste to Energy</b>
<b>WACS</b>	<b>Waste Analysis and Characterization Study</b>
<b>WGF</b>	<b>Waste Generation Factor</b>
<b>WMIP</b>	<b>Waste Management Implementation Plan</b>
<b>WMP</b>	<b>Waste Management Plan</b>
<b>WMIP</b>	<b>Waste Management Implementation Plan</b>
<b>ZEMA</b>	<b>Zambia Environmental Management Agency</b>

## **Foreword**

In conjunction with fast economic growth in Chongwe, solid waste management is a significantly important issue and needs to be addressed in a strategic manner. Improving waste management is certainly not a short-term matter that can be overcome within a day, a month or a year, but a matter that requires a long-term vision along with implementation of practical actions to introduce a sustainable waste management system. Therefore, a solid waste management strategy and action plans should be developed and implemented systematically so that Chongwe can achieve improved sustainable development for the benefit of future generations and for the Municipality itself. However, it is impossible for Chongwe Municipal Council to carry out this task alone. It is essential for the government and the general public to work together to maintain a Clean, Green and Healthy Municipality. Further, I would very much encourage elected Parliament representatives, Civic leaders, Civil society organisations, Non-governmental, Governmental organisations and Citizens to work together in implementing this Waste Management Plan to achieve sustainable development in Chongwe.

Geoffrey Chumbwe

His Worship the Mayor

## **Town Clerk's Statement**

Like many other fast-growing towns in the Country, Chongwe District faces a tremendous challenge in managing its solid waste. In this regard, Chongwe Municipality is one of the first districts to receive technical and financial assistance from UNIDO aimed at supporting the development of a Solid Waste Management Plan based on a holistic solid waste management approach, thanks to the strong leadership and commitment of the UNIDO project committee members. Solid Waste Management Plan for Chongwe was successfully developed with close co-ordination and supervision of the Department of Public Health and key stakeholders. This Plan highlights the main issues, needs and challenges associated with efforts to improve the Municipality's solid waste management system, aimed at raising awareness among key stakeholders towards achieving a resource efficient and zero waste society in the Municipality. It also identifies strategic programmes and approaches to improve waste collection, diversion, and disposal of solid waste including among others waste from industrial, domestic and commercial sector, air pollution generated from poor solid waste management practices whilst, ensuring solid waste services are made sustainable over the long term through supportive financial mechanisms, sound policies, and robust institutional and monitoring frameworks. Accordingly, targets and actions have been identified and proposed, with a view towards encouraging strengthened political commitment, participation and collaboration of key public, private and civil society actors for guiding efficient and effective Solid Waste Management.

Mulowa Sishumba

Town Clerk



## ACKNOWLEDGEMENTS

Chongwe Municipality's Solid Waste Management Plan (SWMP) is the result of concerted and dedicated team efforts led by His Worship the Mayor and the Town Clerk of Chongwe Municipal Council and the SWMP Development Committee comprised of the Director Public Health and affiliated Committee Members and the Heads of relevant Departments namely; Planning, Engineering Services and Finance. The plan also benefited from inputs provided by key public, private, education, academic, faith based organisations and civil society stakeholders. Designed through a participatory and consultative process, the ideas, suggestions, and contributions of these stakeholders proved indispensable for drafting and refining the plan in a timely, more practical and quality manner.

This Plan is the first ever initiative aimed at improving the Municipality's solid waste in a holistic and integrated manner and as such offers a visionary document and strategic guide for addressing key issues, opportunities and challenges associated with transitioning towards a resource-efficient and zero solid waste management system. In this regard, Chongwe Municipal Council expresses its sincere gratitude to all public, private, academic, faith based organisations and civil society stakeholders who actively participated in consultations at all levels, and provided valuable feedback during specific meetings and working group discussions.

The Council benefitted from the generous financial support of the **United Nations Industrial Development Organization (UNIDO)** concerning the co-operation between the Zambia Environmental Management Agency (ZEMA) under the Ministry of Water development, Sanitation and Environmental protection (MWDSEP) in respect of the project "*Promotion of BAT and BET to reduce uPOPs releases from solid waste open burning in the participating African Countries of SADC sub-region*". The Municipality also recognizes the important co-ordinating role played by ZEMA with regards to the technical support services and project facilitation.

## EXECUTIVE SUMMARY

The Solid Waste Management plan explains the solid waste management situation for Chongwe Municipality of Lusaka Province, Zambia. Chongwe Municipal Council just like other Councils in Zambia is faced with a lot of challenges in managing solid waste ranging from indiscriminate disposal, inadequate promotion of reuse and recycling, no promotion of composting, uncollected solid waste in residential areas, open spaces, trading premises and other institutions. Increased Solid waste generation is expected and this is necessitated mainly by the anticipated increase in the population of Chongwe Municipal Council.

The plan is broken down into five sections: (i) *Background*: Overall waste problematic for Chongwe Municipal Council, National legislation framework, Objectives and Inputs from the consultation process (ii) *Current status of solid waste management*: Waste assessment and composition, Waste collection, Waste generation trends and projections, Organization and financing Socio-economic projections and the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis. (iii) *Planning, projections, and assessment*: Assumptions for planning, Forecast in terms of waste generation, total and per waste stream, Waste management options, Collection systems, Waste management facilities, Responsibilities, Economy and financing, Assessment of available capacities, expected costs and benefits and options for financing costs (iv) *Implementation plan*: outlining instruments for the implementation of a solid waste management plan such as Policy/legal instruments, Economic instruments, Environmental agreements/partnerships, Public awareness & communication, stakeholders, Planning in involved institutions, Implementation programme and timing. (v) *Monitoring & evaluation*: describing the actions/initiatives to be monitored, Define the means and right indicators to measure the performance of the applied SWM system Plan the timing of the monitoring and evaluation activities

This Solid Waste Management Plan is formed by the current situation including existing policies, legislation and public perception of Solid Waste Management. The Laws i.e. the Solid Waste Regulations and Management Act NO. 20 of 2019 has provisions to help Chongwe Municipal Council to provide desired Solid Waste Management services within the Municipality. Medical waste is managed by the District Health Office, where they have constructed incinerators in medical facilities within the Municipality. The Zambia Environmental and Management Agency (ZEMA) provided guidance and development of this plan that was funded by United Nations Development Organisation (UNIDO).

It is estimated from the research, that within Chongwe Municipality approximately, of the total solid waste generated 6.5 % tonnes is wood and paper, textile 0.7%, rubber ,2.7%, metal, 1.1%, 18% Plastic, 16 % is glass, 53%, of organic waste and others 2.6% is generated.

The implementation of this plan will be done by the Department of Health-Solid Waste Management Unit. The Department of Public Health will be conducting monitoring, evaluation, and supervision.

Anticipated outcomes of the solid waste management plan includes, changed people's thinking about improper waste management through health education and sensitizations, encourage

stakeholders in sorting of waste at point of generation, increased stakeholders to be involved in reuse and recycling of waste, job creation and to improve the financial position of Chongwe Municipality and achieve a Clean, Green and Healthy Environment.

During the development of the plan, a quantitative research was conducted to assess the solid waste management situation within Chongwe Municipality. Key stakeholders were consulted among them included traditional leadership, civic leaders, civil society organisations, faith based organisations, business community and residents. The findings of this research and submissions from stakeholders were that, more than three quarters of the households and trading premises do not have Solid Waste Management contracts with service providers, thereby using prohibited means of disposing of solid waste e.g. use of refuse pits and open burning. It was established that sorting of solid waste is not done at generation stage and further there is very little activity related to reuse and recycling of solid waste.

Amongst the recommendations made includes, to ensure the disposal site is put on title currently, under traditional leadership, procurement and installation of some waste skips particularly in Markets, to improve the number of solid waste subscribers, Installation of the weighbridge to enable the acquisition of higher quality waste data for the Municipality.

In conclusion, Chongwe Municipal Council requires substantial investments approximately in excess of ZMW 3,000,000 annually to provide the required Solid Waste Management services thereby, improving the Solid Waste Management situation within Chongwe Municipality.

## **1.0 INTRODUCTION TO THE SOLID WASTE MANAGEMENT PLAN**

### **1.1 Background**

Solid Waste Management is a challenge for large urban areas around the world. Removing garbage from residential, institutional and commercial locations in cities is a major logistical and operational task. Solid waste management is usually a function of local government, and often gets a huge share of the city's budget. Solid waste generation rates are rising fast, particularly in cities experiencing increasing population rates and higher economic activity, putting pressure on Municipal governments to deal with rising costs and environmental impacts. As cities grow economically, business activity and consumption patterns drive up solid waste quantities. At the same time, increased traffic congestion adversely affects the productivity of the solid waste fleet. Productivity loss is exacerbated by longer hauls required of the fleet, as suitable land for disposal is pushed further away from urban centers. The challenge is therefore, to expand services to a rapidly growing urban population amid other equally competing demands of Government and Local Authorities.

Zambia's overall goal of solid waste management is to collect, transport and dispose of waste generated by the population in an environmentally and socially sustainable manner. The Zambian government is making strides in solid waste management such as the building of engineered landfills. To enhance efforts to effectively manage waste from plastic packaging, the Country has developed and is implementing legislation called Extended Producer Responsibility (EPR), aimed at discouraging the production of thin plastic packaging and encourage recycling. The main challenges that Zambia faces in waste management are: Insufficient capacity for the recovery and recycling of various types of waste streams such as plastics, Insufficient capacity and equipment for Municipalities to deal with the collection, transportation, and disposal of waste and inadequate awareness on sound management of waste and their impact on human health and the environment.

The Country has gone further, in partnering with the private sector and community-based organizations in Solid Waste Management. A franchise system has been implemented in most districts to encourage participation of the private sector in solid waste management. This has resulted in increased waste collected, transported, disposed of. Additionally, the implementation of the Keep Zambia Clean and Healthy campaign has strengthened information dissemination and awareness creation among members of the general public.

Like many developmental challenges, solid waste management will require the co-operation and support of all Stakeholders at local, national, regional, and international levels.

In line with this, UNIDO through the Zambia Environmental Management Agency (ZEMA) has partnered with Chongwe Municipal Council to implement a pilot project on the promotion of Best Available Techniques and Best Environmental Practices (BAT/BEP) to reduce Unintentionally Produced Persistent Organic Pollutants releases from waste open burning.

### **1.2 Problem Statement**

Solid waste generation rates estimate the amount of solid waste generated by residences or businesses over a certain period of time. Solid waste generation includes all materials discarded, whether or not are later recycled or disposed off. Waste generation rates for residential and commercial activities can be used to estimate the impact of new developments on the local waste stream.

As a consequence, if solid waste management is to be accomplished in an efficient and orderly manner, the fundamental aspects and relationship involved must be identified, adjusted for uniformity of data and understood clearly.

Indiscriminate dumping of solid waste and failure of the collection system in a populated community would soon cause health problems. The activities involved with the management of solid waste from the point of generation, transportation and to final disposal have been grouped into six functional elements:

1. Waste Generation
2. Onsite handling, storage and processing
3. Collection
4. Transfer and Transport
5. Processing and recovery
6. Disposal

The generation of solid waste and final disposal presents a unique problems in almost every District in the Country and Chongwe Municipality is not an exception. This is evidenced by the impacts upon human health and the environment when solid waste is not properly managed. Currently, Chongwe Municipal Council cannot meet the need of Solid Waste Management even though this component is budgeted for annually. The solid Waste Generation Factor (WGF) of domestic waste in Chongwe is estimated at 0.6kg per person per day with the population estimated at 207,613 as of 2020. Therefore, the daily production waste is 124.57 tonnes translating to 3,737.1 tonnes per month. In addition, the amount of domestic waste removed from the Municipality is estimated at 1,470.00 per month. This means waste collection in the Municipality stands at 39%.The main obstacles about managing this solid waste include indiscriminate dumping and littering, open burning and burying. Additionally, the populace is seemingly not sensitive to the garbage around and has any awareness of what represents responsible solid waste management. There are laws in place that prohibit indiscriminate waste disposal, but people could be ignorant.

Therefore, this Solid Waste Management Plan has been developed to address the identified problems and aimed at minimizing the amount of solid waste generated, recover the solid waste materials and recycle them and dispose the waste safely and effectively.

### **Key Issues**

The main challenges for the Chongwe Municipality in solid waste management over the next five years are to successfully:

- a) Improve the efficiency of waste collection in the Municipality to ensure that our CO<sup>2</sup> emissions are reduced to a minimum.

- b) Reduce the amount of material going to Disposal site. Dumping is the main form of disposal for Municipal solid waste. This waste holds a high organic component that in turn leads to greenhouse gas emissions in the form of generated methane.
- c) Increase participation in recycling while reducing contamination levels.
- d) Reduce the amount of dumped rubbish and litter. Dumped rubbish and litter contributes to problems such as vermin and odour and poor presentation of municipality.

This implementation plan addresses these issues by :

- a) Brokering arrangements with companies which deliver alternative waste technologies, encouraging them to invest in waste management facilities in or near Chongwe.
- b) The implementation plan commits Council to:
  - i. Reviewing available alternative solid waste technologies and their applicability to waste management in the Municipality.
  - ii. Establishing a solid waste management facility in the Municipality. This will depend upon both processing plant availability and cost.
- c) Establishing solid waste service standards in the Centra Business District (CBD). If adopted by the Council, it is intended that these will be enforced via existing laws and propose new by-laws when need be.
- d) Lobbying Government, to expand the range of materials able to be recycled by residents. The implementation plan emphasises the need for the Council to continue working with the Government and other organisations to advocate for legislative change and for the need for local government funding to support program delivery.
- e) Recommending changes to the Physical and Town Planning such that all developments are required to provide effective recycling and reuse infrastructure.
- f) Introducing a variable scale of charges for ratepayers as a means of encouraging waste reduction. These charges would be based on bin size and frequency of collection and
- g) Empowering people to do more with less by avoiding the creation of solid waste in the first place. This involves engaging with the community to change their behaviour.

### **1.3 The Solid Waste Management Plan**

The desired outcome for this implementation plan is to reduce unsound waste management practices. This goal is ethical, economical, efficient and visionary, to guide people in changing their lifestyles and practices to emulate sustainable natural cycles, where all discarded materials are designed to become resources for others to use.

This plan seeks to create a well-planned solid waste management system incorporating sorting and segregation, collection, re-use, recycling, recovery and managed final disposal. Therefore, this plan is necessary to ensure that Chongwe Municipality develops and establishes a coordinated approach to sound Solid Waste Management, a system which will lead to improvements in the management of solid waste encompassing all streams. The plan will facilitate the engagement of the community to raise awareness in Solid Waste Management with the aim of changing people's mindset.

## 1.4 Municipality Overview

Chongwe Municipality is situated in the Lusaka Province of the Republic of Zambia. It was declared a District in 1993 and was later upgraded to Municipal Status in February, 2017 via Statutory Instrument Number 14 of 2017. The Municipality has a total surface area of approximately 2,050 Square Kilometres and shares borders with Chibombo District and Lusaka City to the West, Chisamba District to the North, Rufunsa District to the East and Kafue District to the South as shown in *figure 1* below. The Municipality lies between Latitude 20° and 29°30 East of the Greenwich Meridian and extends from latitude 15°30 South of the equator and to the East of the Zambezi River which forms the Zambia-Zimbabwe boundary.

Chongwe's administrative Centre is located 45 Kilometres East of the Central Business Area of the City of Lusaka. This geographical proximity to the Capital City gives Chongwe Municipality the advantage of easy access to several socio-economic services such as Banks, Markets, transport and a host of other amenities. While the rewards of being situated close to the Capital City are many, these benefits also come along with some costs to the Municipality. The costs include spill-over effects of some of the vices found in the City, migration and relatively higher cost of living compared to other Rural Districts far from big Cities.

Chongwe is a Municipality based on agriculture, mining, mineral processing, and transport services. Military bases include the Zambia Air Force base at KKIA, two Zambia National Service camps and Mikango Barracks of the Zambia Army adds to the public sector activity and population. The Central Business District is a short stretch measuring about 0.25km wide on each side of the Great East Road running for some 1.5km.

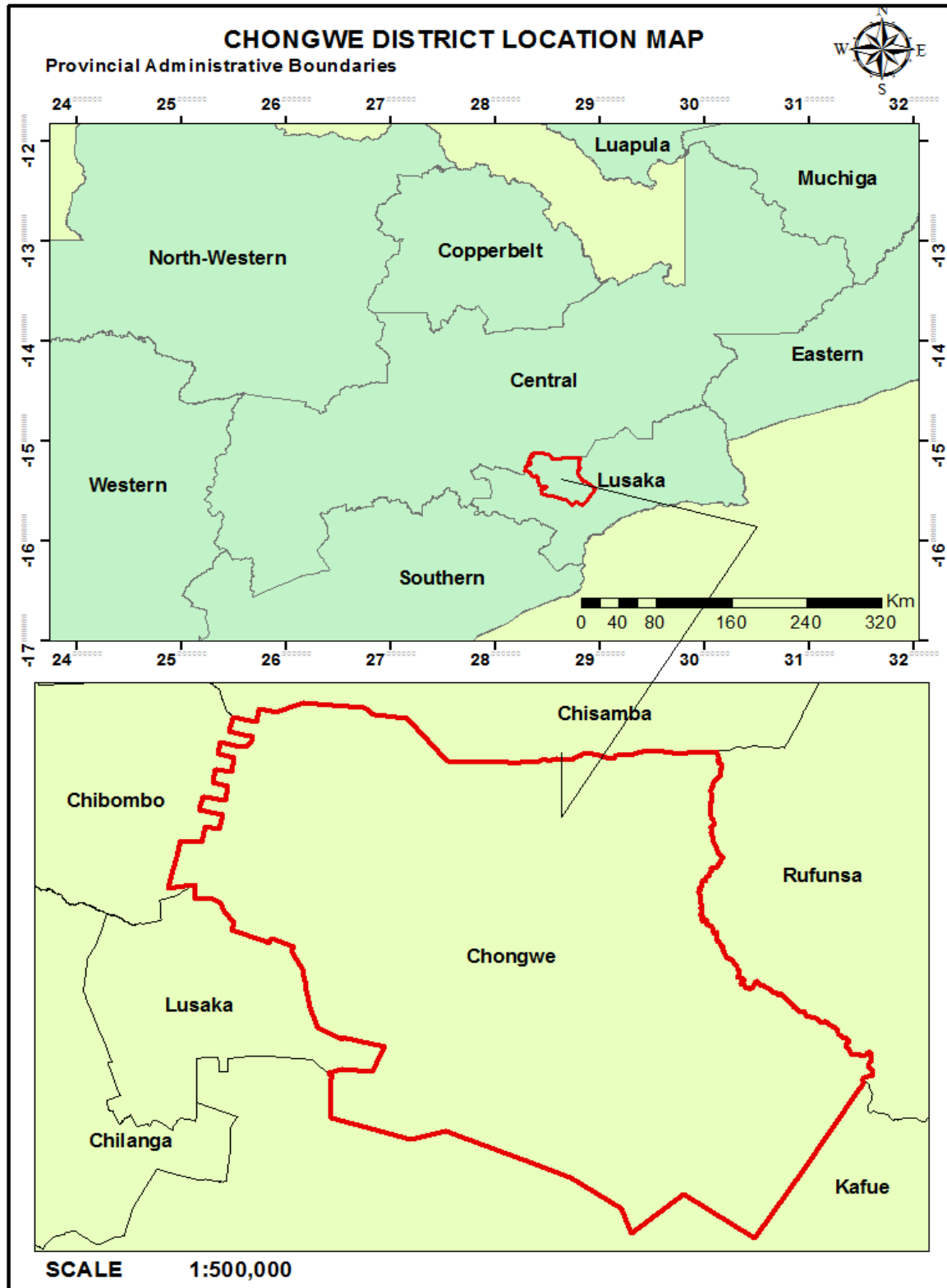


Figure 1: Chongwe Location Plan  
Source; Developed by Chongwe Municipal Council (2020)



Chongwe has some of the most unusual spreads of population centers and many of the affluent areas are the ones bordering Lusaka City near the Western Municipality boundary i.e. Airport Road hosting various industries and organisations such as Delta Auto, Hitachi Construction Machinery, National Institute of Scientific Research, Medicines Regulatory Authority National Laboratory, Waterfalls Shopping Mall, Garden City Shopping Mall; Meanwood Ibex Hill residential compound, Mika Convention Centre, OP Compound, parts of Chelston and Silverst.

The farming blocks are sparsely populated and then a cluster of mid-to-low market residential properties forms Chongwe township. The rest of the population is in the Military establishments, the several boarding Schools and Chalimbana University in addition to the rural-most village dwellings further West, Southwest, and Northwest.

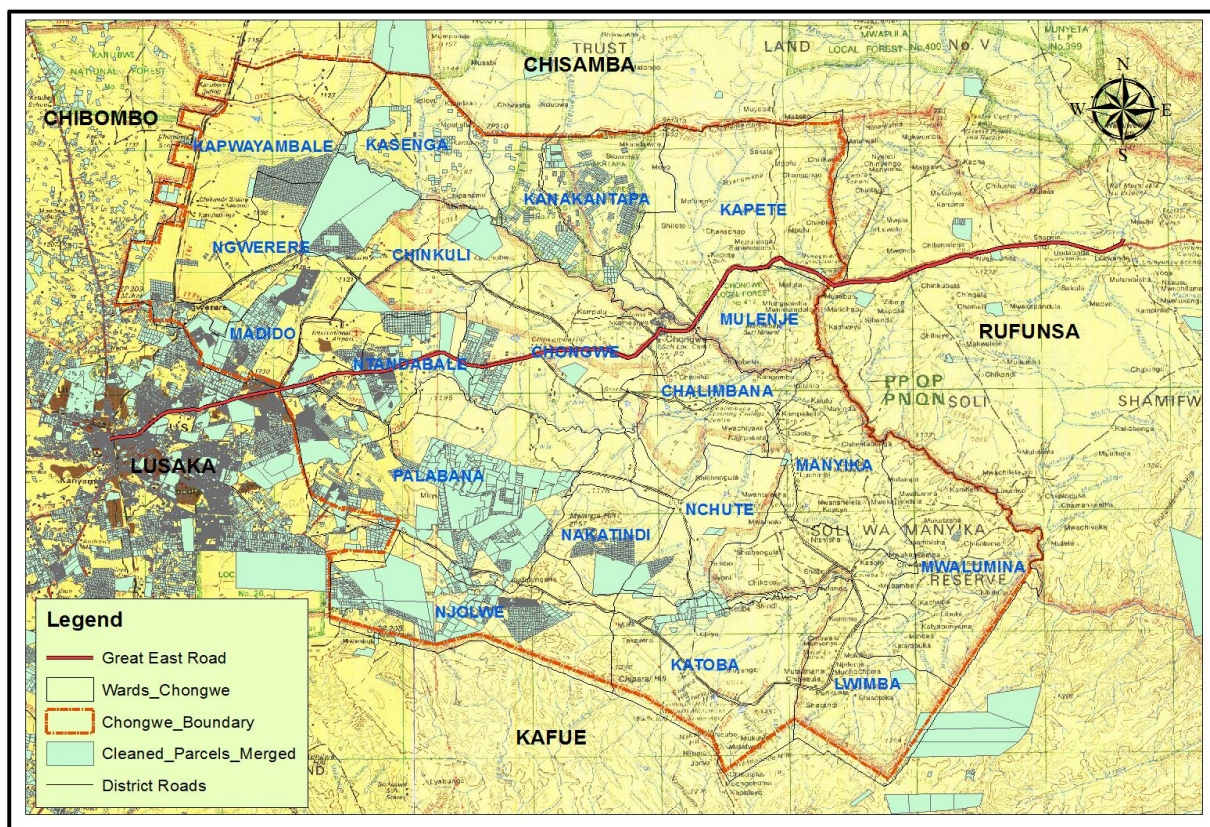


Figure 2: Spatial Distribution for Chongwe  
 Source: Developed by Chongwe Municipal Council (2020)

### 1.5 Legal Framework

This section provides the review of existing plans, policies and strategies which have a bearing on the development of Chongwe Municipality Solid Waste Management Plan. The review highlights the salient features of the documents under review.

### **1.5.1 Policies**

#### **a) *Seventh National Development Plan (7NDP)***

The Seventh National Development Plan (7NDP) is a five-year plan intended to guide national development for the period from 2017 to 2021. The 7NDP is coined under the five Pillars which are the expected developmental outcomes i.e. *economic diversification and job creation; poverty and vulnerability reduction; reducing developmental inequalities; enhancing human development and; creating a conducive governance environment for a diversified and inclusive economy*. It has the aim to “accelerating development efforts towards the Vision 2030 without leaving anyone behind”.

#### **b) *Sustainable Development Goals 2030***

The Sustainable Development Goals (SDGs) are 17 in number intended to improve the planet and the lives of the citizens by 2030. The key goals relevant for Chongwe include, the goals to end poverty and hunger; the goals to promote good health, education and equality; the goals to improve access to clean water and clean energy, and to promote life under water and on land; and the goals to promote economic growth, climate action and industrial/infrastructural developments. The achievement of the SDGs would be done through partnership among key stakeholders including private sector participation.

#### **c) *The New Urban Agenda***

The New Urban Agenda was formally adopted by national governments at the United Nations Conference on Housing and Sustainable Urban Development, commonly referred to as Habitat III, on 20<sup>th</sup> October, 2016. The New Urban Agenda has three (3) broad principles, that is, to leave no one behind, ensure urban equity and eradicate poverty; to achieve sustainable and inclusive urban prosperity and opportunities for all; and to foster ecological and resilient cities and human settlements.

#### **d) *Decentralisation Policy***

Zambia`s decentralization policy of 2002 empowers local communities by devolving decision making authority, functions and resources from the Centre to the lowest level with matching resources (Office of the President, 2002). The policy acknowledges the importance of decentralized management as an efficient mode of implementing developmental strategies responding to localized needs.

#### **e) *Chongwe Integrated Development Plan (IDP)2020-2030***

This District Integrated Development Plan (IDP) which guides the development of Chongwe Municipality for the period 2020 to 2030. Based on the key issues within the Municipality, the vision for Chongwe District is stated as, “*A Livable and Resilient Municipality by 2030*”. The core goals to achieve this vision are, sustainable growth of the spatial form ensured, improved access to welfare and social services, accelerated and climate resilient economic growth, and sustainably managed environmental services.

### ***1.5.2 National Legislation***

The related laws and regulations for Solid Waste Management are as follows:

***a) The Constitution of the Republic of Zambia, NO. 2 of 2016***

The Constitution of the Republic of Zambia, NO. 2 of 2016 (herein after referred to as Constitution) is the supreme law of the Republic of Zambia and any customary law or act or any omission that contravenes the Constitution is illegal. Article 151 of the Constitution provides for a system of Local Government Administration which seeks to promote people participation in democratic governance. The Constitution emphasises the promotion, development, and prioritisation of social, spatial, financial, and economic planning.

***b) The Local Government Act, NO. 2 of 2019 of the Laws of Zambia***

The Act empowers Local authorities to enact by laws applicable in their parts of the Country. Laws on air quality, cleanness of surroundings, people movement, etc. are particularly expected. The councils are also responsible for construction and maintenance of the inner District, suburb, and township road network. Under this project, this latter function of the District Council is important as it allows proper access for waste collection and waste movement.

***c) Environmental Management Act NO. 12 of 2011***

It established and empowers the Zambia Environmental Management Agency (ZEMA) to regulate all matters related to environmental management, including approving environmental impact assessments for all prescribed projects (such as Disposal sites or Landfills). For the case of Disposal sites or Landfills, the ZEMA must issue an annually renewable operating license. It clearly defines municipal waste, responsibilities of the stakeholders, and regulates the preparation of a national MSWM plan.

The Government of the Republic of Zambia, through the Ministry of Water Development, Sanitation and Environmental Protection recently issued Statutory Instrument (SI) No. 65 of 2018 to be enforced by the Zambia Environmental Management Agency (ZEMA) in the spirit of section 58 of the Environmental Management Act of 2011. Essentially, the SI seeks to enforce the principle of extended producer responsibility (ERP) by restricting, among other things, plastics below 30 microns in thickness

Currently there is no specific law on recycling, to encourage renewable energy and to support the informal sector.

***d) The Public Health Act Cap 295***

The Public Health Act Chapter 295 of the laws of Zambia is an Act to provide for the prevention and suppression of diseases and generally to regulate all matters connected with public health in Zambia. Therefore, under this Act, disposing waste in such a way as to constitute a nuisance is an offence. The Local Authority has the responsibility to ensure that people do not dump waste indiscriminately and is empowered to correct any action or omission that creates a



nuisance. The Local authority is responsible for the management (collection, transportation and final disposal) of Municipal Solid Waste, besides any other type of waste.

Chongwe Municipal Council enforces these laws via the Public Health Department, Among the many sections falling under Public health includes Inspectorate, Health Education, Cleansing and Pest control. The main sources of solid waste within the Municipality is from the Central Business District (shops, hotels, offices, streets), and some residential premises. The Cleansing and Pest control Sections are involved in daily collection, transportation and final disposal of solid waste at the Disposal site situated in Chikwangala village.

*e) Solid Waste Regulation and Management Act NO. 20 of 2018.*

An Act to provide for the sustainable regulation and management of solid waste; general and self-service solid waste services; the incorporation of solid waste management companies and define their statutory functions; the licensing and functions of solid waste service providers, operators and self-service solid waste providers and provide for their functions; the regulation, operation, maintenance and construction of landfills and other disposal facilities; the setting and approval of tariffs for management of solid waste and provision of solid waste services; and matters connected with, or incidental to, the foregoing.

*f) The Local Government (Street Vending and Nuisances) (Amendment NO. 2) Regulations of 2018*

The Minister of Local Government signed in to law S.I. NO. 12 of 2018, also referred to as The Local Government (Street Vending and Nuisances) (Amendment No. 2) Regulations of 2018. These amendment regulations replaced the schedule of penalties, referred to as the First Schedule in the equivalent regulations of 1992. The penalties governing street vending, hawking, littering, waste disposal, cleanness of premises, etc., have been clarified and increased. The Chongwe Municipal Council has full authority to enforce these penalties where it determines that they are necessary.

## **1.6 Objectives**

### **1.6.1 Main Objective**

To establish a holistic waste management system aimed at minimising the amount of solid waste generated and disposed of by increasing solid waste recovered and recycled by 2030

### **1.6.2 Specific Objectives**

1. To provide adequate and affordable Municipal solid waste collection services
2. To reduce indiscriminate dumping by promoting sound waste management practices
3. To construct Recyclable Collection Centers for increased participation in sorting of waste at source, reuse and recycling.
4. To develop capacity, awareness and advocacy in implementing waste management programs.
5. To provide sustainable services through regular review, monitoring, innovation and improvement.

## 1.7 Stakeholder Consultation

A broad consultation process was undertaken to get inputs from various stakeholders as a requirement to develop the Draft Solid Waste Management Plan. A series of meetings were held, involving various stakeholders from residential areas, trading premises, Waste pickers, recycling companies, Franchise Companies, schools, Faith Based Organization, Government Institutions and Market Committees, traditional leadership, Civic leaders etc. Minutes for these meeting are attached as *Appendix B*

The process started with situation analysis by visiting all the seven (07) waste management zones within Chongwe Municipality to assess the solid waste management situation, planning meetings, development of data collection tools (questionnaires),visitation to the proposed solid waste recyclable collection Centre, data collection from the key stakeholders within the Municipality, compilation of data, data analysis, data interpretation and finally presentation of the findings to the key stakeholders.

## 2.0 SOLID WASTE MANAGEMENT STATUS IN CHONGWE

For years, solid waste management has emerged as one of the greatest challenges facing Chongwe Municipal Council. It is not a new problem though, but the volume of waste being generated continues to increase at a faster rate than the ability of the Local Authority to improve on the financial and technical resources needed to parallel this growth. Currently, Chongwe Municipal Council (CMC) is struggling to manage the waste under tight budgets, and highly inadequate and malfunctioning equipment. This is evidenced from the inefficient collection practices with variable levels of service, poor and unhygienic operating practices in the waste management. Mostly, only a small fraction of solid waste generated daily is collected and disposed of and the rest of the solid waste generated remains unaccounted for.

Chongwe Municipal Council catchment in terms of Solid Waste Collection stretches through Palabana, Madido, Kwamwena, Mutumbi, Ngwerere, Ibex Meanwood, Ibex Ndeke Airport area, Silverest, Waterfalls, Kanakantapa, Chalimbana and Chongwe township areas.

In an effort to enhance waste management in the Municipality, the Local Authority through the Public Health Department demarcated the Municipality into seven waste collection zones and are described based on existing flagship area names outlined in *table 1*. The zoning was done to embrace Public Private Partnership (PPP) and also due to the council's inability to service all the areas in terms of solid waste collection due to some of the following reasons;

- a) Inadequate standard transportation vessels
- b) Vastness of the Municipality
- c) Limited number of refuse collectors
- d) Long distances from the servicing areas to the final refuse disposal site.

Management of various types of solid waste in the Municipality has been a very difficult and challenging issue. The difficulty has manifested itself in the perennial diseases' outbreaks such as dysentery and pollution of water sources, air, soil, or land contamination, proliferation of pests and vermin, and the loss of aesthetic beauty. Improvements are desired in solid waste management covering aspects of minimization of solid waste generation, collection, re-use, recycling, treatment and disposal. The Municipality is faced with a critical solid waste management problem threatening the health, socio-economic development and the environment.

Major concerns include;

- ✓ Littering and indiscriminate dumping of solid waste
- ✓ Inadequate recycling agents and Companies
- ✓ Low Solid Waste subscription by the waste generators

- ✓ High levels of inappropriate methods of waste disposal i.e. open burning and burying.
- ✓ Improper handling of hazardous waste
- ✓ Health hazards due to indiscriminate disposal of solid waste
- ✓ Low standards of operational disposal sites
- ✓ Potential for contamination of soils and underground/surface water from operations of disposal sites and the indiscriminate disposal of wastes

To assess the Solid Waste Management situation in Chongwe, the Department of Public Health working in collaboration with officers from other departments i.e. Planning and Engineering, conducted a research in areas that included the residential areas (Dam and Ibex areas within the pilot project jurisdiction), selected Schools in Chongwe CBD and surrounding areas, various Trading premises, Faith based Organisations, Solid Waste Management Franchise Companies and Recycling companies.

Different questionnaires were developed and used to obtain the Solid Waste Management situation and system in place, depending with the type of stakeholders and how they are involved in Solid Waste Management. The data collection tools is attached in *Appendix A*.

Data was collected from 168 institutions and households, were systematic sampling method was employed in residential areas and information was obtained from every fifth House-hold. The Stakeholders highlighted the challenges that lead to poor management of solid waste or indiscriminate disposal of waste that includes the following;

- i. Inconsistence of solid waste collection by service providers, this leads to uncollected waste being disturbed by dogs and supports flies which are vectors of various diseases
- ii. No solid waste management service providers in some areas
- iii. The Skip bins are placed distant places
- iv. None effective implementation of the Recycling process
- v. Prolonged or sometimes none take off of projects after sensitization

Stakeholders submitted mitigating factors to challenges stated above included the following;

- i. Sorting Solid Waste at point of generation
- ii. Sensitize the community on BAT/BEP in solid waste management
- iii. Place well labeled skip bins in more strategic points
- iv. Create an enabling environment for reuse and recycling companies
- v. Bring on board traditional leaders for the project to secure more Land for proper Solid Waste Management activities
- vi. Ensure disposal sites are properly managed

## 2.1 Solid Waste Assessment and Composition

Currently, there is no weighbridge at the disposal site or anywhere else in the waste collection chain to establish volumes of waste collected with objective certainty. Since waste vary greatly in density, it is not helpful to make uniform volume estimates for solid waste sourced from different locations. As such, prudent estimates have been made as a starting point and may be subjected to strong correction later. To approximate the solid waste being dumped at the disposal site, Chongwe Municipal Council measures solid waste through approximating the tonnages of the vehicles involved in collection, transportation and final disposal.

## 2.2 Solid Waste Generation Sources and Streams

Per capita waste generation rates have been developed using the estimated quantities of waste delivered to the disposal site and the annual estimate of population from Central Statistic Office (CSO). The total raw estimate figure of 3,737 ton/month for a population of 207,613 has been worked out at 600g (0.6kg) per capita per day. For prudence purposes, an overcapacity factor of 20% has been added to each area's mapped volumes. This is especially necessary since all weights reported are based on visual estimates. Additionally, the overcapacity factor is estimated to carter for the households not captured in the figures captured under the valuation roll.

To establish and estimate the amount of waste generated and collected within the Municipality, the following factors have been used;

- i. The waste generation factor (WGF) per individual has been put at 0.6kg per day.
- ii. A household (HH) is made up 5 persons, thus the WGF for a HH is 3.0kg per day.
- iii. The number of HH in any given area has been obtained from the Valuation Roll conducted in 2019.
- iv. For purposes of prudence in these calculations, an overcapacity of 20% has been factored in to carter for households not captured in the roll.
- v. For all the calculations, figures with an overcapacity of 20% will be used.

Calculations for each waste zone has been done as follows;

Zone A

No. of HH=12,476 (Data from the roll)

With a 20% Overcapacity, **HH=14,971**

Waste Generation Factor (WGF) per HH=0.6kgx5people=3.0kg/1000=0.003tonns/Day

Waste Generated Per Day (tonns)= No. of HHxWGF

$$14,971 \times 0.003 \text{tonns} = \underline{44.91 \text{tonns/day}}$$

Waste Generated in A month=44.9tonnsx30days=1,347.41 tonns per month.



The above outlined calculations have been done for all the zones as tabulated in *table 1*.

Table 1 further shows a figure of 3,266.14 tons per month. Collected waste is 1,470.00 is worked out from disposal site records as shown in the table.

DRAFT

Table 1: Solid Waste Management Zones

one	Township	Collector	HouseHolds (HH)		Estimated Waste Generated Volume (tonns)				Estimated Waste Collected Per Month (tonns)
			Estimated No of HH from Valuation Roll	No of HH from adjusted @ 20% up	Per Day (HHxW GF)	Adjusted Volume Per Day @20% up	Volume Per Month	Adjusted Volume Per Month	
<b>A</b>	Chongwe	CMC	12,476	14,971	37.43	44.91	1,123.00	1,347.41	750.00
<b>B</b>	Chalimbana and Kanakantapa	Versed Waste Management Limited	150	180	0.45	0.54	13.50	16.20	Waste collection has not yet began in this area
<b>C</b>	Silverest and Waterfalls	Citimop	1,628	1,954	4.88	5.86	146.52	175.82	650.00
<b>D</b>	Meanwood Ibex and OP Compound	Citimop	1,430	1,716	4.29	5.15	128.70	154.44	
<b>E</b>	KKIA, Meanwood Ndeke, Vorna Valley and MFEZ	Citimop	5,973	7,168	17.92	21.50	537.57	645.08	
<b>F</b>	Madido, Obama and Ngwerere	Viclesa Waste Management & Construction Company	1,663	1,996	4.99	5.99	149.67	179.60	60.00

one	Township	Collector	HouseHolds (HH)		Estimated Waste Generated Volume (tonns)				Estimated Waste Collected	
			<i>Estimated No of HH from Valuation Roll</i>	<i>No of HH from adjusted @ 20% up</i>	<i>Per Day (HHxW GF)</i>	<i>Adjusted Volume Day @20% up</i>	<i>Volume Per Month</i>	<i>Adjusted Volume Per Month</i>	<b>Per (tonns)</b>	<b>Month</b>
<b>G</b>	Kwamwena and Mutumbi	Waste Master Limited	6,922	8,306	20.77	24.92	622.98	747.58	10.00	
Totals			<b>30,242</b>	<b>36,290</b>	<b>90.73</b>	<b>108.87</b>	<b>2,722.00</b>	<b>3,266.14</b>	<b>1,470.00</b>	

Source: Estimates from Census Data and Valuation Roll for Chongwe Municipal Council, 2019

The following are the sources of Municipal Solid Waste within the Municipality;

### ***Domestic Waste***

This category of solid waste comprises mainly of waste that is generated from household activities. This normally includes such materials as wastepaper, plastic and wood off cuts Kitchen waste and yard waste. Currently, there is no separation of the various types of solid waste that constitute this category. The solid waste Components are usually mixed and dumped in places that are not designated for disposal.

### ***Commercial Waste***

This is the solid waste stream that is generated from Commercial and Business entities and is normally composed of such materials as discarded office paper, cardboard, plastic, and general packaging waste.

### ***Industrial Waste***

This is the type of solid waste that is generated from the industrial production processes. The type in this category includes waste such as industrial sludge from factories, manufacturing facilities and refineries. It also includes food processing waste and water treatment filter cake sludge. Other types would include ash from industrial combustion processes.

### ***Hazardous Waste***

This is the type of waste with such characteristics as flammability, irritability, ignitability, corrosively and toxicity. Examples of this type of waste includes industrial hazardous waste products such as waste containing heavy metals like lead and chromium, polychlorinated biphenyls (PCBs), asbestos and ink sludge. Other types include, lead acid batteries, clinical waste, and waste oils.

Clinical waste includes waste from the hospitals and other Healthcare facilities. It is characterized by such types as Sharps, Swabs, and pathological and cytotoxic waste. Currently, the Municipality has hospital and healthcare waste which is produced in clinics and in Hospitals.

### ***Agricultural Waste***

This category of waste basically consists of discarded materials from agricultural activities. The major component of this type of waste is the organic portion. Examples of this waste includes remains from vegetables. Other wastes from agricultural activities are pesticide-containing wastes which are classed as hazardous.

## **2.3 Amount of Waste and Types**

Without the opportunity to validate any of the weight information at any stage in the waste distribution chain, the estimates here must be taken as indicative only and subject to validation and correction as soon as actual weighing becomes possible.

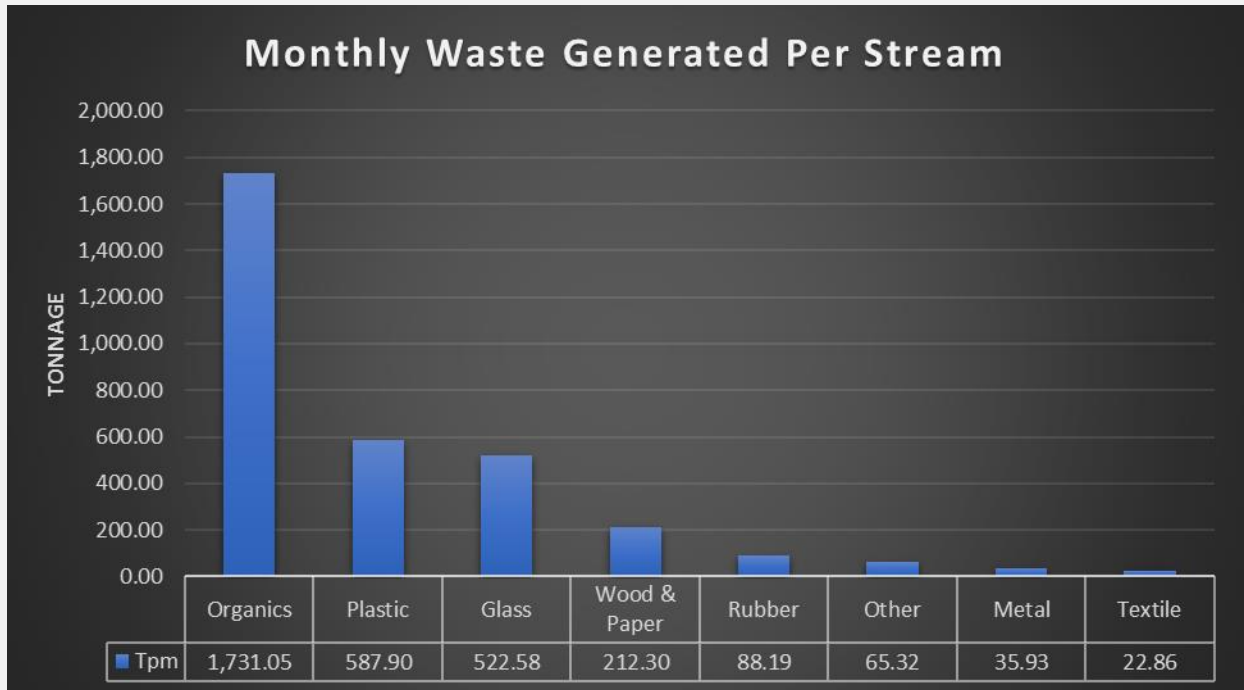


Figure 3: Approximated Amount of Waste Generated Per Stream

The figure above shows that over 50% of the waste generated in the district is organic, followed by plastic and glass at 18% and 16% respectively. The table below shows the percentage distribution for the waste streams presented in *figure 6*.

Table 2: Percentage Distribution for The Waste Streams

<i>Component</i>	<i>Tonns per month</i>	<i>%</i>
<b>Organics</b>	1,731.05	53
<b>Plastic</b>	587.90	18
<b>Glass</b>	522.58	16
<b>Wood &amp; Paper</b>	212.30	6.5
<b>Rubber</b>	88.19	2.7
<b>Other</b>	65.32	2
<b>Metal</b>	35.93	1.1
<b>Textile</b>	22.86	0.7
<b>Total</b>	<b>3,266.14</b>	<b>100</b>

Source- Tipping Register

## 2.4 Waste Recycling Activities

There are four recycling related operations within the Municipality; three are home-based subsistence-scale recycling work while the more industrialized one is completed in Lusaka,

with Chongwe only hosting the raw material sourcing using pickers at the disposal site. These operations are:

- a) *PET bottles* and *thick-film plastic*: The waste pickers at the disposal site isolate and bag these materials which are then transported to Lusaka for recycling and reuse purposes. The pickers are paid according to the weight of materials recovered from waste heaps.
- b) *Textile off-cuts*: These come from tailors and the community. These are used for making door mats and are sold to off-takers directly by the tailors as they accumulate the offcuts over a period of time.
- c) *Wood chips* and *saw dust* from the woodworkers and any wood waste arising in the public market. These chips are used as alternative fuel in the community. Saw dust is used as bedding material for chickens in poultry rearing.
- d) *Metal Waste*: There is very little metal found at the disposal site because scrap metal has a ready market.

## 2.5 Collection systems

The table below outlines the collection methods used in the district.

Table 3: Collection Methods in Chongwe District

<i>TYPE</i>	<i>EXAMPLE</i>	<i>COLLECTION METHOD</i>
<b>Single User Facility (SUF)</b>	Lodges, Schools, University, Colleges, Industrial Sites (e.g. Lusaka East Multi Facility Economic Zone), Hospitals	Privately contracted waste collectors or council recommended collector for that Waste Management District.
<b>Public Facility</b>	Markets, Central Business District (CBD).	Council is directly responsible for Solid Waste management Services.
<b>Households</b>	The townships (as clustered into Waste Management Zones	The Council and franchise companies are responsible Solid Waste Management Services.

The Council is using two types of collectors: Chongwe Municipal Council and contracted solid waste management franchise Companies.

The franchise Companies collect solid waste from their respective zones. This system allows them to control their revenue collection.

The Chongwe Municipal Council collects solid waste from the CBD and surrounding areas in zone A. The Council also collects from households and SUFs.

Currently, there is a diversity of collection points as follows:

- i. Open locations in public areas
- ii. Skips in Single User Facilities

iii. Individual households in the townships

The first two types of collection points are sustainable under current conditions while the last one continues to present aggregation challenges because the contractors concerned struggle to achieve the critical mass of customers to break even on costs and sustain their operations. However, the Council is putting up measures towards resolving the aggregation problem

**Frequency of Collection**

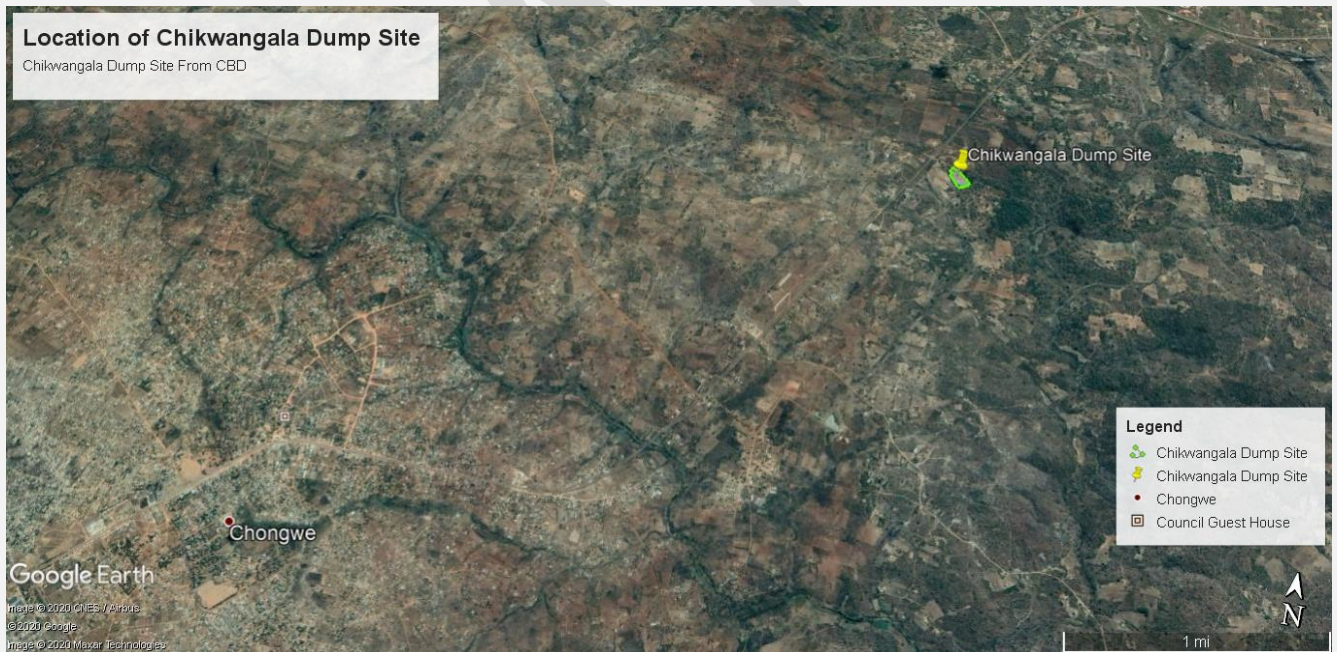
The Council collects in CBD on a daily basis and atleast once a week in residential areas. Franchise companies collect atleast once a week in their respective zones.

**Segregation of Waste**

Currently, there is no provision for segregation of waste at point of generation.

**2.6 Waste management facilities**

Chongwe has one disposal site, Chikwangala Disposal site about 8km from the CBD located in Chikwangala Village on the Southern side of Great East Road on the Eastern exit with the following coordinates latitude 15°17'56.71"S and Longitude 28°43'14.87"E. **Figures 7 and 8** show the location map and site plan for the same.



Source: Google Earth

Figure 4: Location Map for Chikwangala Disposal site





Source: Google Earth, 2020

Figure 5: Google Map Site Plan for Chikwangala Disposal site

Details of the facilities and equipment the Council uses are;

- A disposal site-The land is still under traditional ownership and the Council has simply been allowed to access and to use it as a disposal site by the Village Headman.
- 15 self-employed waste pickers at the disposal site who supply recyclables to private waste recovery company.
- A Tractor with a Tipping Trailer
- 3-ton light truck
- Skip Loader

## 2.7 Waste Generation Trends and Projections

The population for Chongwe is growing, this growth is putting pressure on the natural environment. The sprawling rural settlements have a serious impact on water dependency, biodiversity, carbon emissions, waste generation and high energy consumption. The increase in population and settlement expansion will lead to high solid waste generation hence, the need to put in place sound solid waste management systems.

## 2.8 Organization and financing

The franchisee Companies are empowered by the Council to collect fees directly and use as their own revenue. The only intervention is that the tariff levels are set by the Council.



Currently, four licensed contractors are active and service six zones while the Council services the CBD and surrounding areas. The collection fees approved by the Council for households ranges between ZMW20.00 to ZMW100.00 paid monthly and for commercial premises fees are determined based on waste generated and frequency of collection embedded in the contract signed between two parties. The contractors in turn pay two amounts, one fixed and the other paid per incident, i.e., a one-off license fee of ZMW8,000.00 and a dumping fee of ZMW50.00 per load for franchise companies. Non-franchised institution and individuals pay ZMW200.00 per load as tipping fees. The waste pickers and recycling agents pay ZMW200.00 to the council for transportation of recyclables to recycling companies.

## **2.9 Socio-economic projections**

### *Economic Activities*

The economy of Chongwe is predominately agricultural with small and medium scale farmers being the major producers. According to Ministry of Agriculture, the small and medium scale farmers' makeup about 90% of the farmers in the Municipality. Agricultural activities are mainly in crop production, horticultural production and livestock production. Over 75% of household incomes in the Municipality is derived from agricultural related ventures, either as own production or sale of agriculture produce and by products.

The next major economic activity after agriculture, livestock and fisheries is trading of consumer goods. Finished products are brought in from other towns but mainly from wholesalers in Lusaka and sold in various retail outlets by sole traders. Some of the key commercial activities in the Municipality include; General groceries, Garages and service stations, Hardware shops, Pharmacy and drug stores, Furniture shops, Electrical goods, Builders and plumbers, Banks, hospitality industries, restaurants and bars, Butcheries, Wholesale shops, Printing and publishing company, Building materials, General engineering works.

### *Income Levels*

The Zambia Development Agency, give indicative figures ranging between ZMW7,700.00 and ZMW15,800.00 as monthly incomes for moderately experienced first-degree holders across Zambia, across the various professions in the public and private sector. In its labour force survey published in December, 2018 the Central Statistical Office reported that the average income across all sectors, genders, and experience levels by 2017 was ZMW3,330 per month. These figures will be important for guiding expectations of ability to pay for solid waste management by households in the Municipality.

## 2.10 Strengths and Weaknesses in The Current Waste Management System

Table 4: SWOT Analysis Table

Strengths	Opportunities
<ul style="list-style-type: none"> <li>✓ The waste pickers operating at the disposal site are already organized under a waste recycling company.</li> <li>✓ Adequate legislation supporting solid waste management services.</li> <li>✓ Availability of staff that provide information to the community on waste management via various communication channels.</li> <li>✓ Provision of solid waste collection services in most all zones.</li> <li>✓ Promotion of public-private partnerships in solid waste management.</li> <li>✓ Availability of specialized equipment (skip loader/Tractor)</li> <li>✓ Goodwill from the Ministry of Local Government supporting solid waste management.</li> <li>✓ CBD well serviced, given current limited resources</li> <li>✓ Disposal site well managed, given current limited resources</li> <li>✓ Positive relationships with local stakeholders enabling Council to manage facilities beyond own financial capacity (e.g., acquisition of land for disposal site, waste handling at disposal site, etc.)</li> <li>✓ High youth population available for many necessary low-skill processes</li> <li>✓ Fair road network to all key solid waste generation centers</li> </ul>	<ul style="list-style-type: none"> <li>✓ Goodwill from many stakeholders for better solid waste management to keep the town clean</li> <li>✓ Relatively low population (room to design and test WM operations without quickly over-burdening them)</li> <li>✓ Many national facilities within the Municipality</li> <li>✓ Organised and experienced waste pickers</li> </ul>
Weaknesses	Threats
<ul style="list-style-type: none"> <li>✓ Inadequate staff responsible for solid waste management services</li> <li>✓ Inadequate specialized equipment</li> <li>✓ Inadequate funds</li> <li>✓ Use of illegal practices such as burying, open burning and indiscriminate disposal of solid waste by the majority of people in the lower income townships</li> <li>✓ Low subscription tariffs</li> <li>✓ Lack of an engineered land fill</li> <li>✓ Lack of waste sorting at point of generation</li> <li>✓ Poor road network due to unplanned settlements</li> </ul>	<ul style="list-style-type: none"> <li>✓ Most people are familiar with burying and open burning of solid waste instead of paying for collection services</li> <li>✓ Disposal site land ownership outside Council control</li> <li>✓ Low uptake of collection service.</li> <li>✓ Low waste collection tariffs</li> </ul>

### 3.0 PLANNING, PROJECTIONS, AND ASSESSMENT

#### 3.1 Assumptions for planning

##### *Uncertainty*

As with any forecast, assumptions based on current experience and expected future occurrences are relied upon to predict future events. To the extent that assumptions prove to be unrealistic or expected future occurrences do not materialize, actual results will deviate from the forecast and that deviation may be substantial. The danger of a substantial deviation is mitigated somewhat by the frequency of the analysis. Nonetheless, understanding the variability of the results is essential. Although it is unlikely that all of the pessimistic or all of the optimistic assumptions will be the most accurate, such an occurrence is possible. For this reason, the assumptions must be viewed with the inherent uncertainties in mind recognizing the inherent uncertainties.

Effective solid waste infrastructure management requires evaluating both existing demand and projecting future capacity needs. Two key components are *the per capita waste generation rate*, upon which the level of service is based, and *the population growth rate*. Using this information, the waste processing and disposal capacity of the existing system and planned additions can be evaluated to determine a comprehensive waste management system needed. To calculate the amount of solid waste to be managed and the projected facilities demand, population projections, per capita generation rates, and historical records were used.

The population of Chongwe Municipality is estimated to reach around **207, 613** by end of 2020 (CSO 2010 figures), with an annual growth rate of 2.5%. The population in 2018 was 182, 174 with a population density of 22 people per square kilometer. The population is concentrated in areas around Chongwe Central and in areas towards the City of Lusaka on the western side as well as along the Great East Road and Southern part of the district.

Table 5: Municipality Population

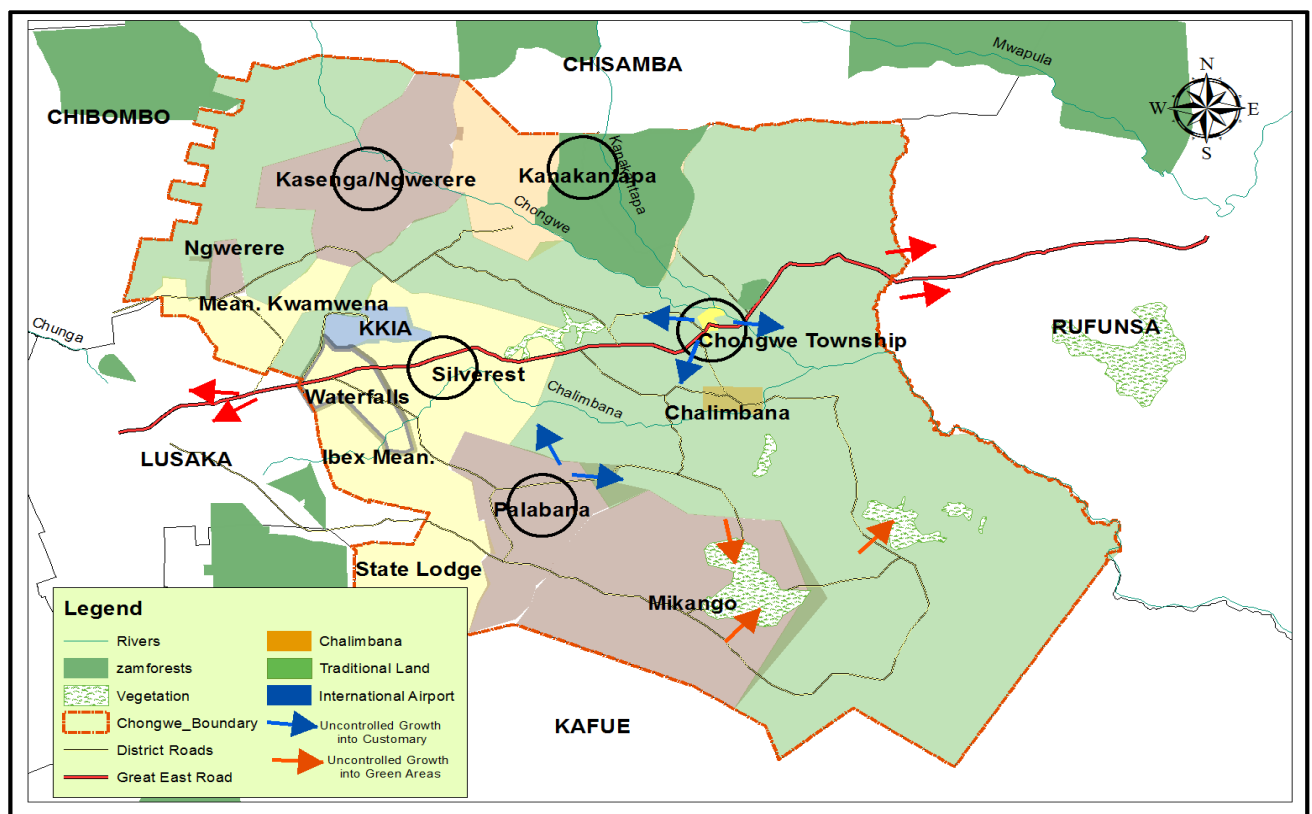
Category	2020		2021		2022	
	Number	%	Number	%	Number	%
Children 0 - 11 Months	8305	4	8612	4	8827	4
<5 Years	41523	20	43059	20	44135	20
5 - 14 Years	58132	28	60283	28	61790	28
Women 15 - 49 Years	45675	22	47365	22	48548	22
All Adults 15 Years+	122492	59	127024	59	130199	59
Total Male (All ages)	101730	49	105495	49	108132	49
Total Female (All ages)	105883	51	109800	51	112545	51
Total Population\ <sup>1</sup>	207613		215295		220677	
Population Growth Rate		2.5		2.5		2.5
Expected Pregnancies	10806	5.4	11211	5.4	11626	5.4
Expected Delivers	10406	5.2	10796	5.2	11195	5.2
Expected Live Births	9905	4.95	10277	4.95	10657	4.95

**Source:** CSO 2010 Census report

According to the CSO Report for 2010, the total number of males and females in the district in 2020 is 101, 730 and 105, 883 respectively representing 49% to 51% sex ratio. The population of

Chongwe is estimated to reach above 268, 873 (representing 131,748 males and 137,125 females) by 2030 at a growth rate of 2.5 per cent.

A number of people from Lusaka City and surrounding districts are settling in gazetted farm areas, Chongwe Central, ZAF 71 Military Camp, Meanwood, Palabana, Chalimbana, Silver Rest, Ndeke and Ngwerere and Kanakantapa. The proposition of the physical development growth centres or points is based on the observed development patterns that are currently taking place in these key growth areas giving rise to yearly population fluctuations in Chongwe Municipality as shown in *figure 9*. These growth centers are key to the development of Chongwe. Each of the growth nodes has a key economic base providing the main economic activities of the settlement. Within these growth nodes other key land uses including, residential, commercial, social amenities as well as agriculture will be provided as support land uses. The population is expected to increase even further due to numerous residential neighborhood projects being developed in the Municipality such as Nkwashi, Roan Park, Bonanza, and Sitatunga City as these greatly contribute to migration of people from outside the Municipality.



(Source: Developed by Chongwe Municipal Council (2020))

Figure 6: Projected Growth Nodes

The Council needs to upgrade existing infrastructure to improve its solid waste management system. This requires suitable technologies for solid waste collection, transport, biological treatment (composting), recycling, waste-to-energy and the establishment of an RCC. However, limited expertise and capacity for identifying appropriate technologies adopted to local conditions, inadequate resources such as finance and technical capabilities to identify and invest in new technologies, and limited research and practical application of new technologies are some of critical barriers obstructing progress.

Per capita waste generation rates are developed using the estimated quantities of waste delivered to the disposal site and the annual estimate of population from Central Statistic Office (CSO). The adjusted total raw estimate figure of 3,737ton/month for a population of 207,613 has been worked out at 600g (0.6kg) per capita per day. For prudence purposes, an overcapacity factor of 30% has been added to each area's mapped volumes. This is especially necessary since all weights reported are based on solid waste transportation trucks estimates. This safety factor allows for volume growth over a 10year period. This is as outlined in *table 6*.

### 3.2 Forecast in Terms of Waste Generation, Total and Per Waste Stream

The collection system will be designed to service the following envisaged solid waste generation capacity:

Table 6: Projected Waste Generation Figures

District	Township	Mapped Volume (Ton/Month)	Maximum Estimate (Ton/Month)
A	Chongwe	1,347.41	1,751.63
B	Chalimbana and Kanakantapa	16.20	21.06
C	Silverest and Waterfalls	175.82	228.57
D	Meanwood Ibex and OP Compound	154.44	200.77
E	KKIA, Meanwood Ndeke, Vorna Valley and MFEZ	645.08	838.61
F	Madido, Obama and Ngwerere	179.60	233.49
G	Kwamwena and Mutumbi	747.58	971.85
<b>Total</b>		<b>3,266.14</b>	<b>4,245.98</b>

The table below shows the waste generation totals per stream at 100% yield at every sorting stage:

Table 7: Projected Waste Generation Per Stream

Component	Tpm	%	Assumption	Recycle	Fuel	Compositing	Disposed off
Organics	2,250.37	53	No off taker			2,250.37	
Plastic	764.28	18	30% difficult to recycle thus is disposed off at the Disposal site	534.99			229.28
Glass	679.36	16	70% to be used in block making	475.55			203.81
Wood & Paper	275.99	6.5	No off taker		275.99		
Rubber	114.64	2.7	No off taker		114.64		
Other	84.92	2	-				84.92
Metal	46.71	1.1	Collected as scrap metal	46.71			
Textile	29.72	0.7	No off taker		29.72		
<b>Total</b>	<b>4,245.98</b>	<b>100</b>		<b>1,057.25</b>	<b>420.35</b>	<b>2,250.37</b>	<b>518.01</b>
<b>Percentages</b>				<b>25%</b>	<b>10%</b>	<b>53%</b>	<b>12%</b>

The above table shows The disposal site would receive about 12% (518.01tpm) of the Municipality solid waste. 53% (2,250.37tpm) of the waste would be available for composting. 10% (420.35tpm) would be available for delivery to alternative fuel projects. Up to 25% of collected materials could be available for re-cycle.

- The mid-grid activities, including composting are therefore, critical not only for the additional cash realizable but also for sustainability of the disposal site project. If these activities are short-circuited out of the chain, then the 87% solid waste which would otherwise be re-routed would all end up at the disposal site, shortening disposal site life and losing all the potential revenue as well.

In order for all the above opportunities to be realized, the Council will develop business case documents together with interested and relevant stakeholders who would provide commercial off-take of the various materials. Further, there is need to enhance service uptake and collection rate, because the higher the available volumes the better the achievable pricing from solid waste off-takers. Finally, it will be necessary to develop a service delivery mechanism to ensure that the waste sorting is happening efficiently. Therefore, there is need to invest in solid waste management infrastructure to enlarge the group of waste pickers operating in the Municipality.

### *Compost*

Chongwe solid waste has a relatively high percentage of organic matter (over 40%) because much of the waste comes from zones which include affluent households, the airport, and two



major shopping malls at Waterfalls and Garden City, as well as the abattoir waste. This high organic fraction would be good raw material for a compost yard.

#### ***Glass.***

At 16%, the glass fraction is likely to be a useful resource for block makers. Therefore, there is need to explore the opportunity in this area,

### **3.3 Collection Systems**

The Council will continue using the existing two types of collection which are self and engagement of solid waste franchise Companies.

The franchisees collect waste from their respective zones. This system allows them to control their revenue collection.

The Council collects waste from the CBD and surrounding areas in zone A. The Council also collects from households and SUFs.

Currently, there is a diversity of collection points as follows;

- i. Open locations in public areas
- ii. Skips in Single User Facilities
- iii. Individual households in the townships

#### ***Frequency of Collection***

The Chongwe Municipal Council will continue collecting from the CBD on a daily basis and atleast once a week in residential areas while Franchise companies will collect atleast once a week in their respective zones.

#### ***Segregation of Solid Waste***

Primary sorted solid waste will be collected from the various solid waste generators (business premises, households, industries) and then transported to the Recyclable Collection Centers where it will be partially stored and then transported to the recycling companies. In the RCC, secondary sorting of waste will take place and stored in classified separate compartment according to the nature of waste awaiting transportation to various institutions such as recycling companies. The solid waste that is not sorted will be stored in sorting bays for it to be sorted. For compositing materials, they will be collected from the RCC and then transported to the end user (Farmer and used as compost manure).

Below is an outline of the mechanism Chongwe will implement to reduce indiscriminate waste disposal practices.

**3Rs offer an environmentally friendly alternatives for moving towards zero waste society and to deal with impact of growing wastes on human health, economy and natural ecosystem**

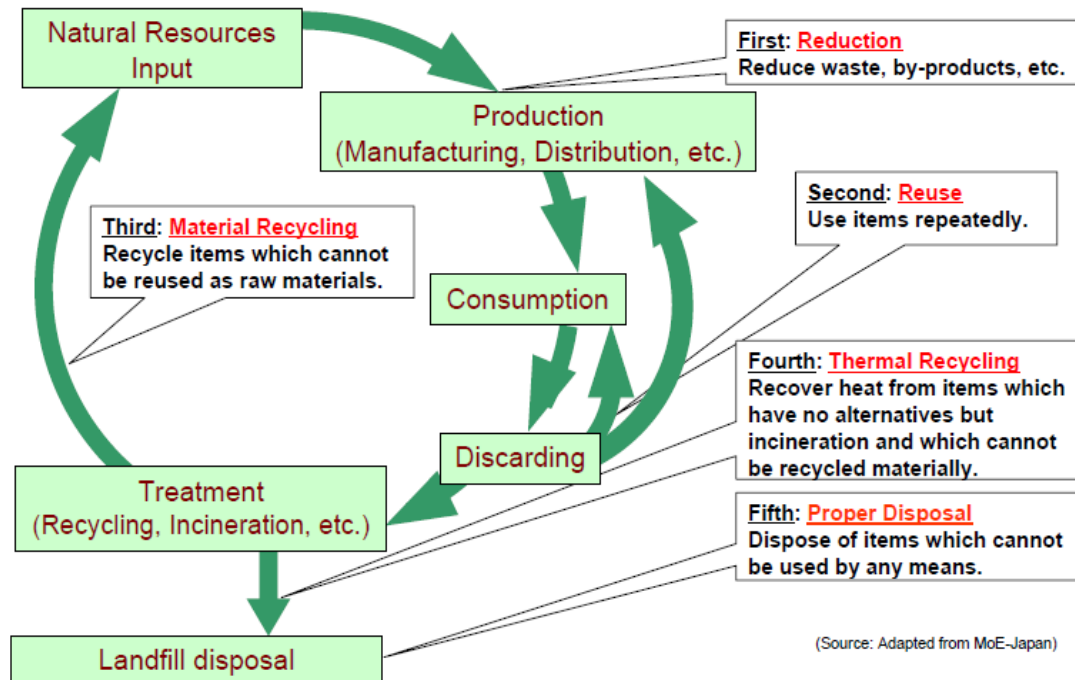


Figure 7: 3Rs Waste Management Model

The following mechanisms will be used to enhance the collection systems;

- Consider raising income at all points of the solid waste management grid. This means conducting a critical review of the entire Municipal solid waste management process using the solid waste management grid and following up on all proposed income points.
- Early engagement of traditional leadership to support improvement and sustaining actions. This is because Chongwe disposal site operation is dependent on goodwill from traditional leaders.
- Engage solid waste collection companies and pro-actively supervise them to anticipate and, wherever possible, avoid work abandonment.
- Conduct marketing and educational campaigns using the health risks associated with open burning of solid waste and benefits to the Municipality of using the managed solid waste collection service
- Conduct a household capacity-to-pay study to support the systematic setting and regular review of waste collection fees.



- f) Normalize ownership/control of the disposal site land to increase confidence in investment efforts dependent on the disposal site
- g) Prepare prudent improvement actions for collection of solid waste from the CBD and for management of the disposal site.
- h) Provide regular courtesy updates, to traditional leaders assisting the Council, to maintain and sustain the positive stakeholder relationship.
- i) Prepare training and up-skilling plans to various key stakeholders
- j) Regularly monitor, take survey route drive-through, waste collection routes and document results to support contract performance reviews
- k) Create investment opportunities in Solid Waste Management.

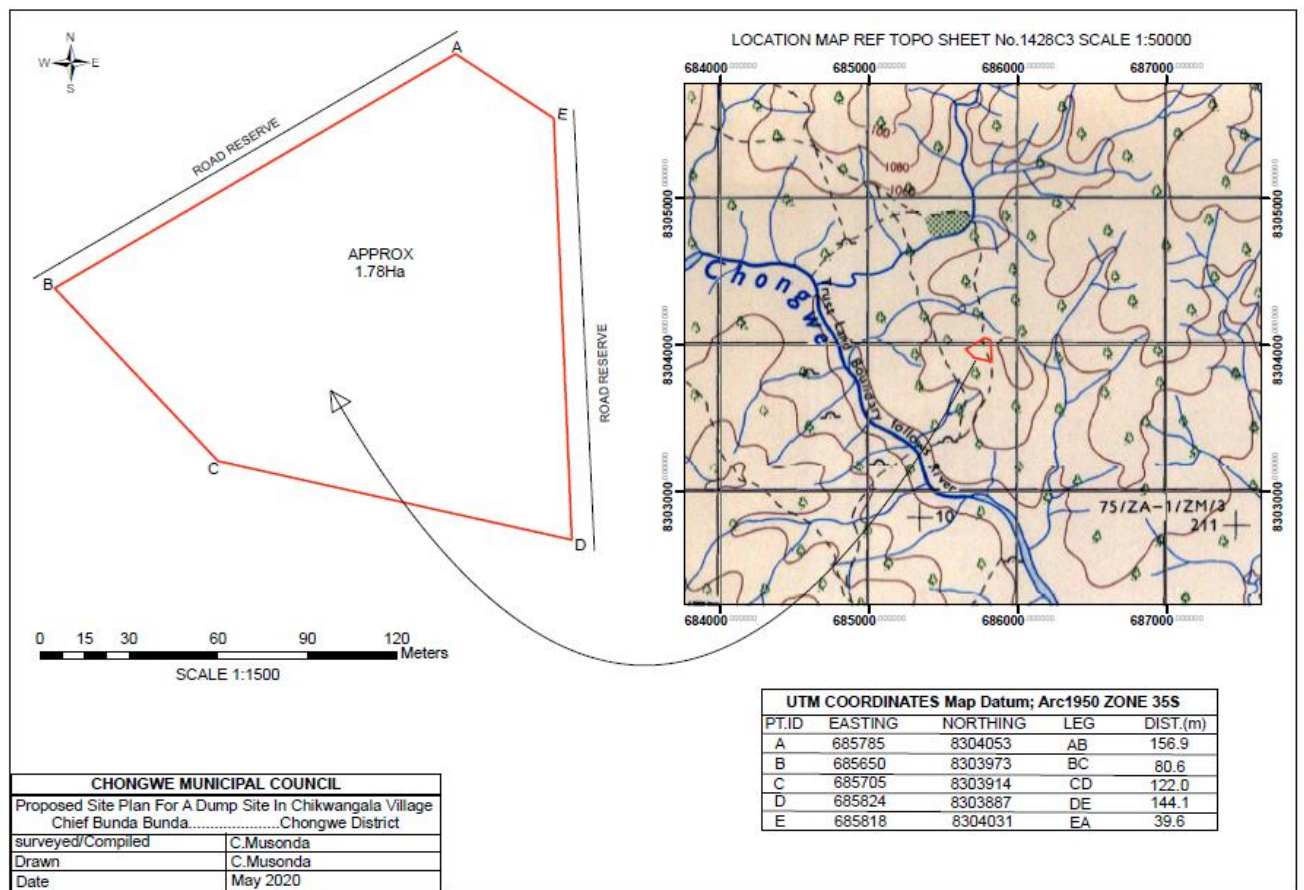
### **3.4 Waste Management Equipment and facilities**

The Council has the following equipment and facilities:

- Chikwangala disposal site
- A Tractor with a tipping trailer
- 3-ton light truck
- Skip Loader
- Proposed site for the construction of the Recyclable Collection Centre
- Proposed site for the construction of the Disposal site approximately 15 hectares

### 3.5 Proposed Recyclable Collection Centre

Recycling centers primarily process recyclable materials that have been separated for re-use/recycling and not intended for disposal. Below is the site plan for the proposed RCC.



Source: Developed by Chongwe Municipal Council, 2020

Figure 8: Site plan for the proposed RCC

### Benefits of A Recyclable Collection Center

- ✓ Reduces the amount of waste sent to disposal site and incinerators
- ✓ Conserves natural resources such as timber, water and minerals
- ✓ Increases economic security by tapping a domestic source of materials
- ✓ Prevents pollution by reducing the need to collect new raw materials
- ✓ Supports local manufacturing and conserves valuable resources
- ✓ Helps create jobs in the recycling and manufacturing industries

## **Compost**

Composting is a sub-area of recycling that addresses the organic portion of the solid waste stream. At its most basic level, composting uses the action of microorganisms to process waste materials and produce a product that can be used as a soil amendment. Some industries and segments of the agricultural community have long been using composting as a means to reduce their solid waste generation and enhance the productivity of their farmland. It is a sustainable organics management solution with low cost and require less technical capacity than alternative treatment methods.

Since Municipal solid waste generation is expected to continue rising in the district, this pilot project attempts to understand how Chongwe Municipality can sustainably manage organic solid waste through composting.

DRAFT

### 3.6 Stakeholders Relevant To Solid Waste Management and Their Responsibilities.

Several stakeholders have been engaged to ensure the promotion and implementation of sound solid waste management to reduce open burning and buying of waste. The table below show the mapped stakeholders and roles they will play.

Table 8: Stakeholders and Their Responsibilities

Stakeholder	Responsibilities
<b>National Government</b>	Develop policies, programs, and institutions, innovative financing for resource efficiency / 3R infrastructures. Create conducive policy framework to encourage PPPs, capacity building programs/facilities for SMEs, awareness programme for citizens, green procurement cooperation (government-private/industry-R&D/Universities) for, circular economic approach, green growth, technology transfer, information clearing house, etc.
<b>Local Authority</b>	Integrate resource efficiency in urban development policy and strategy, innovative financing for resource efficient infrastructure, realize PPPs, awareness programs for citizens, green procurement, Sensitization and education campaigns, Enforcement for waste subscription, Collection of sorted waste consistently, Supply appropriate color coded refuse bags, Supervision of the franchised companies' operations, Maintain waste management facilities, Coordinate the collection of recyclables by the recycling companies, Formulation of by-laws to promote sorting and recycling of waste
<b>Waste Management Franchise Companies</b>	Coordinate with the council to promote, collection of sorted waste and Compliance with the provision of the contract
<b>Private/Industry Sector</b>	Develop strategies to commercialize 3R, Environmental performance reporting, (3R technologies, green products, waste recycling, waste exchange, green purchasing, PPP, in-house capacity building programs, Corporate Social Responsibility,
<b>Banks/Financial</b>	Investment/loan schemes for solid waste management projects
<b>Scientific and Research Institutions/Universities</b>	Provide back up for science-based policy making at government level, develop dedicated projects on resource efficiency/3R in collaboration with government and business/industry sector, create human resources and experts in the field of resource efficiency/3R, look for international collaboration (University-University, University-Multi-national corporation), catalyst for decision makers, technology evaluation.
<b>Citizens/NGOs</b>	Promote green consumerism, community awareness raising on house-hold waste segregation and its contribution to resource efficiency/3R, knowledge dissemination

### 3.7 Economy and financing

Funding will be sought in the Council Budgets for implementing solid waste service standards and a program to make recycling more effective.

Public revenue for solid waste management will be generated through collection of user charges for solid waste management services. Waste collection charges for household or domestic waste have developed based on the user and engaged franchise companies. This cost recovery method helps to sustain solid waste management provision in the Municipality. However, revenue captured from the collection of waste remains very low, and as such cannot maintain a balance with total solid waste management expenditures, especially for the capital costs required for new solid waste management infrastructure. It was also identified that there is inadequate financial support from the national government for solid waste management at local level as service provision is considered the responsibility of Municipalities. However, there are efforts made to promote the private sector involvement in solid waste management embedded policy measures and capacity for establishing Public-Private Partnerships (PPP).

The informal sector is involved in managing a small fraction of solid waste collection and recycling in the Municipality affording job opportunities for a significant number of urban poor. Further, integrating the informal sector into the Municipality's solid waste management system will be explored. Therefore, there is a great need to review the solid waste management tariff to ensure improved service provision.

The tables below outline the current solid waste management tariffs and projected revenues for the Local Authority for the next five years.

Table 9: Waste Management Tariffs

S/N	REVENUE SOURCE	YEAR					
		2020	2021	2022	2023	2024	
1	Franchise Fees (ZMW)	8,000.00	8,000.00	10,000.00	10,000.00	10,000.00	
2	Community Based Entrepreneur fees (ZMW)	2,500.00	2,500.00	3,000.00	3,000.00	3,500.00	
3	Recyclables Transportation Fees (ZMW)	200.00	200.00	200.00	250.00	250.00	
4	Tipping Fees (ZMW)	50.00	75.00	75.00	75.00	75.00	
5	Subscription Fees (ZMW)	Residential	20.00	20.00	30.00	30.00	30.00
		Trading Premise	35.00	50.00	50.00	50.00	50.00

Table 10: Waste Management Revenue Projections

S/N	REVENUE SOURCE	YEAR					
		2020	2021	2022	2023	2024	
1	Franchise Fees	48,000.00	48,000.00	48,000.00	60,000.00	60,000.00	
2	Recyclables Transportation Fees	4,800.00	4,800.00	4,800.00	6,000.00	6,000.00	
3	Community Based Entrepreneur fees	2,500.00	2,500.00	3,000.00	3,000.00	3,500.00	
4	Tipping Fees	48,000.00	48,000.00	48,000.00	50,000.00	50,000.00	
5	Subscription Fees	Residential	96,000.00	97,000.00	98,000.00	99,000.00	100,000.00
		Trading Premises	63,000.00	64,000.00	65,000.00	66,000.00	67,000.00
<b>TOTAL</b>		262,300.00	264,300.00	266,800.00	284,000.00	286,500.00	

### Other Possible Sources of Funding for Financing Costs

Revenues are expected from the solid waste management services with regards to the present and projected sources. The projections are separated and come from different sources of revenues. These include the revenues from collection of fees and tipping fees for solid waste disposal.

Other possible funding sources will include;

- Local government equalization fund (LGEF) 20% Capital projects from Ministry of Local Government
- Donor fund
- Charges /Penalties
- Non-Governmental Organisations
- Private Sector

### 3.8 Available Capacities and Identified Capacity Gaps

The Department of Public Health currently, operates under the following staffing levels who have the capacity to contribute positively to a sound Solid Waste Management System based on the BAT/BEP activities. They are a highly trained professionals with a speciality in implementing Solid Waste Management Activities.

#### *Current Public Health Staff Establishment*

The following table below shows an ideal Public Health Department of a Municipality relevant to solid waste management and the current establishment.

Table 11: Public Health Department Establishment for Chongwe Municipality

	<b>Public Health</b>	<b>Ideal Establishment Municipality</b>	<b>Current Establishment</b>
<b>A</b>	<b>General Administration</b>		
	<b>Director of Public Health - Municipality</b>	<b>1</b>	<b>1</b>
<b>B</b>	<b>Public Health Inspectorate</b>		
	<b>Chief Health Inspector</b>	<b>1</b>	<b>0</b>
	<b>Senior Health Inspector</b>	<b>2</b>	<b>2</b>
	<b>Health Inspector</b>	<b>10</b>	<b>5</b>
	<b>Health Demonstrator</b>	<b>2</b>	<b>0</b>
<b>C</b>	<i>Health Education</i>		
	<b>Senior Health Education Officer</b>	<b>1</b>	<b>1</b>
	<b>Health Education Officer</b>	<b>2</b>	<b>0</b>
	<b>Assistant Health Education Officer</b>	<b>1</b>	<b>0</b>
<b>D</b>	<i>Control of Infectious Diseases</i>		
	<b>Senior Environmental Health Technologist</b>	<b>1</b>	<b>0</b>
	<b>Health Education Assistant</b>	<b>1</b>	<b>0</b>
	<b>Environmental Health Technologist</b>	<b>5</b>	<b>2</b>
<b>F</b>	<b>Cleansing and Pest Control</b>		
	<b>Cleansing Superintendent</b>	<b>1</b>	<b>1</b>
	<b>Assistant Pest Control Superintendent</b>	<b>1</b>	<b>0</b>
	<b>Assistant Cleansing Superintendent</b>	<b>1</b>	<b>0</b>
	<b>General Worker</b>		<b>41</b>

The Cleansing Section is responsible to plan and implement solid waste management operations comprising solid waste collection, transportation, street cleaning and management of the disposal site. The Cleansing Section is the unit providing waste collection, transport and disposal services and public cleansing.



Available vehicles and equipment include tractors and trailers, light truck and Skip loaders. All of these are operational however, the section lacks adequate specialized solid waste management equipment. The current status of operational vehicles is far from adequate for an effective and consistent solid waste collection service covering the entire Municipality. The service areas for the Cleansing Section are therefore, limited to public areas such as markets as well as the Central Business District, some hotels and shopping centers and a number of industries and residential areas, due to the fact that the Cleansing Depot cannot provide sufficient service to solid waste generators, private collection and transport contractors have been engaged to service other Zones.

### **3.9 Transportation Equipment for Solid Waste**

1. 01 Tractor and Tipping Trailer used for refuse collection
2. 01 Eugene light truck
3. 01 Skip loader

### **3.10 Identified Resource Capacity Gaps**

#### ***Human Resource***

In order to effectively and efficiently carry out Sound Solid Waste Management activities in the Municipality, the Council must recruit the following officers:

01-Chief Health Inspector

05 - Health Inspectors

02- Health Education Officers

01- Assistant Health Education Officer

01-Assistant Cleansing Superintendent

03- Environmental Health Technologists

02-Health Demonstrators

01-Health Education Assistant

39-General Workers

#### ***Trainings and Workshops for Officers***

Some specific and directly applicable trainings for the key technical staff under the Department of Public Health, including but not limited to solid waste Characterization, disposal site management, Composting, Statistical Sampling & Reporting, Computer modeling softwares, Business Planning, Legal Enforcements, quantitative and qualitative methods.

### **3.11 Expected Benefits of Sound Solid Waste Management**

1. *BAT/BEP Practice (Recycling/Reusing) Is Highly Lucrative*

Although there are only a few people who sincerely consider this as an industry into various facets of solid waste management like recycling and reusing and reap the benefits. Many companies are gradually associating themselves with this industry and are ready for a long-term investment.

## ***2. Keeps the Environment Clean, Green and Healthy***

The greatest advantage of solid waste management is keeping the environment fresh and neat. These waste disposal units also make the people go disease-free as all the resultant solid waste is properly disposed and taken care of.

## ***3. Saves the Earth and Conserves Energy***

This characteristic of solid waste management includes specifically the recycling aspect. As recycling of waste helps in reducing the cutting down of trees. This cutting of trees is mainly done for the production of charcoal.

By using this method, we can use recycled waste to make quality papers rather than relying on trees. Also, recycling needs only a minimal amount of energy for utilization and complete processing. The resultant product we obtain is a renewable source of energy and is eco-friendly.

## ***4. Reduces Environmental Pollution***

Solid waste management if done in a proper manner not only eliminates the surrounding waste but also will reduce the intensity of the greenhouse gases like methane, carbon monoxide which is emitted from the wastes accumulated, burying and opening burning.

The depth of the existing Disposal sites and o will be curbed, thereby cutting down the harmful factors that affect the environment.

## ***5. Waste Management Will Help the Council Earn Revenue***

Actually, there are many companies which will pay for collection of waste. Right from old and used bottles to tin cans and e-wastes, all kinds of solid waste are collected and paid. This type of solid waste are then segregated according to the extent of pollution they cause to the environment and this type of solid waste is recycled accordingly for various purposes.

## ***6. Creation of Employment***

In all the facets of solid waste management, a huge amount of labor is needed. Right from the collection to the final stage of segregation, every phase needs manpower and ultimately a large number of employment opportunities get opened up.

## **4.0 IMPLEMENTATION PLAN**

Targets have been established to measure the success of the plan. This plan details a series of actions that operationalize the Solid Waste Management Plan. Specific targets have been set to ensure that actions are monitored, measured, and improved. These targets may appear modest, but they take account of continued population growth and the need to turn around an existing trend towards greater solid waste production within the Municipality.

### **4.1 Implementation Tools**

#### *Consultation*

A broad consultation process was undertaken to develop the Solid Waste Management Plan. In support of the development of the Solid Waste Management Implementation Plan, meetings were held with representatives from various stakeholders who agreed that the Implementation Plan is a necessity.

#### *Relation to Council Policy*

The Solid Waste Management Implementation Plan is consistent with the vision outlined in the Draft Integrated Development Plan for Chongwe Municipality to become “A Liveable and Resilient Municipality by 2030.”

#### *Government Relations*

The Solid Waste Management Implementation Plan is aligned with the following pieces of legislature;

The Local Government Act NO. 2 of 2019 (Cap. 281 of the Laws of Zambia), Environmental Management Act No. 12 of 2011, The Public Health Act Cap 295 and Solid Waste Regulation and Management Act, 2018 (NO. 20 of 2018).

#### *Finance*

Funding will be sustained by the SWM financial system used by the Council. Revenues are expected from the solid waste management services with regards to the present and projected sources as will be outlined in Council Budgets. The projections are separated and come from different sources of revenues.

#### *Sustainability*

The implementation plan details initiatives which will improve waste management practice within the municipality. This will contribute to making the municipality more sustainable.

#### *Public awareness & communication, stakeholders*

The main modes of supplying waste management information from the District Council to the public will include:

- Market Committee
- Official contacts
- Civic leaders Councilors (elected local government politicians) who are the actual municipal council, working as a governing board providing local policy direction to

the career Ministry of Local Government employees, and guidance to their electorate in the townships.

- Traditional Leaders
- Door to door
- Radio, TV and Print media
- Posters/Brochure
- Debate programs in Schools
- Drama
- Social media

#### 4.2 Waste Management Implementation Plan 2020 To 2030

Targets have been established to measure the success of the plan. These will contribute to achieving the *Vision 2030* target set by the Government and operationalized by Chongwe Municipal Council. These targets may appear modest but they take account of continued population growth and the need to turn around an existing trend towards greater waste production within the municipality.

##### Objective 1: To provide adequate and affordable municipal waste collection service.

Table 12: Objective 1 WMIP

Target	Short-term (2020-2023)	Mid-term (2024-2027)	Long-term (2027-2030)
Increased (%) municipal waste collection coverage in the whole city	80%	90%	100%
Progress (%) of waste separation at source and collection system will be operated	1 pilot Zone	50%	100%
Increased (%) material recovery and recycling	25% (10% recyclable materials and 15% food waste)	50% (15% recyclables and 35% food waste)	80% (20% recyclables, and 60% food waste)

**Objective 2: To Reduce indiscriminate dumping by promoting BAT/BEP**

Table 13: Objective 2 WMIP

<b>Target</b>	<b>Short-term (2020-2023)</b>	<b>Mid-term (2024-2027)</b>	<b>Long-term (2027-2030)</b>
Reduction of illegal dumping and open burning in the city	80%	90%	100%
Improvement of the Disposal site operation	1 pilot Zone	4 Zones	7 zones
Reduction (%) of food waste, market waste and green waste to be disposed off.	25% (10% recyclable materials and 15% food waste)	50% (15% recyclables and 35% food waste)	80% (20% recyclables, and 60% food waste)
Introduction of appropriate technologies for intermediate treatment	Feasibility study and pilot application of composting, anaerobic digester (bio-gas) and other options such as animal feeding to treat organic waste	Operation of composting, anaerobic digester (bio-gas) and animal feeding for organic waste. Feasibility study on refuse derived fuel and waste to energy technologies aimed at minimising waste disposal.	Any application of refuse derived fuel and waste to energy technologies aimed at minimising waste disposal.

**Objective 3: To construct Recyclable Collection Centers for increased participation in sorting of waste at source, reuse and recycling of waste.**

Table 14: Objective 3 WMIP

<b>Target</b>	<b>Short-term (2020-2023)</b>	<b>Mid-Long term (2024-2030)</b>
Construction of RCCs in all waste collection zones in the district	Pilot RCC for Zone A	Construct RCCs in the remaining Zones

**Objective 4: To Develop Capacity, Awareness and Advocacy in Implementing Waste Management Programs.**

Table 15: Objective 4 WMIP

Target	Short-term (2020-2023)	Mid-term (2024-2027)	Long-term (2027-2030)
Reduction of illegal dumping and open burning in the city	80%	90%	100%
Improvement of the Disposal site operation	1 pilot Zone	4 Zones	7 Zones
Reduction of food waste, market waste and green waste to be disposed of.	25% (10% recyclable materials and 15% food waste)	50% (15% recyclables and 35% food waste)	80% (20% recyclables, and 60% food waste)
Introduction of appropriate technologies for intermediate treatment	Feasibility study and pilot application of composting, anaerobic digester (bio-gas) and other options such as animal feeding to treat organic waste	Operation of composting, anaerobic digester (bio-gas) and animal feeding for organic waste. Feasibility study on refuse derived fuel and waste to energy technologies aimed at minimising waste disposal.	Any application of refuse derived fuel and waste to energy technologies aimed at minimising waste disposal.

**Objective 5: To provide sustainable services through regular review, monitoring, innovation and improvement.**

Table 16: Objective 5 WMIP

Target	Short-term (2020-2023)	Mid-term (2024-2027)	Long-term (2027-2030)
Establishment and monitoring of data collection and benchmark performance indicators	50%	75%	100%
Decreased number of enforcement actions filed against non-compliant entities	50%	75%	100%
Increased degree of public/customer satisfaction (%) about the waste management service	50%	75%	100%

The detailed action plan is attached in Appendix C

## 5.0 MONITORING AND EVALUATION ASSESSMENT

Monitoring system performance is fundamental for ensuring proper functioning of the overall waste management system and ensuring strategy goals are achieved. Key system performance indicators should be reviewed, monitored and/or measured on a regular basis to track system performance and the effectiveness of identified initiatives.

Implementation of this plan should be monitored on a continuous basis, with progress and performance assessed against its specified goals and targets. Monitoring and evaluation in this way works to identify a known starting point, providing the possibility of establishing whether or not anticipated milestones have been reached as time goes on.

The implementation plan outlines programs or activities, that will be undertaken in the district. The table below, is the monitoring and evaluation tool that will be used to assess the implementation progress.

Table 17: Monitoring and Evaluation Template

Performance indicator	Targets	Achievement in reporting period	Cumulative progress to date	Overall Status(select)	Narrative assessment/ summary of progress

### 5.1 Recommendations

1. Normalization of leasehold on the disposal site land to allow long-term development work (land still un-titled and under ownership of traditional leadership). This situation means that certain significant actions, not limited to outright restriction of access or even closure of operations, are effectively under the control of a third party other than the Municipal Council.
2. Procurement and installation of some waste skips, particularly in the market, to restrict waste run-off particularly in the rainy season.
3. Expansion of paid-for waste collection service to all institutional infrastructure in the district such as hospitals, schools, Lodges Banks, Service Stations, Malls etc.
4. Installation of weighbridge or simpler/lower-cost weighing system to enable the acquisition of higher quality waste data for the district,



APPENDICES

Appendix A: DATA CAPTURING TOOLS



CHONGWE MUNICIPAL COUNCIL

PUBLIC HEALTH DEPARTMENT

QUESTIONNAIRE FOR RESIDENTIALS AREAS

Solid Waste Management Best Available Techniques (BAT) and Best Environmental Practices (BET) UNIDO Project. This questionnaire is based on the data collection done in the pilot residential areas i.e. Dam and Ibex residential areas.

1. Name of the Area.....
2. Are you the Tenant YES.....NO..... **(please tick where appropriate)**
3. How do you manage your waste? Open burning.....burying.....service provider  
.....other means..... **(pleases tick where appropriate)**
4. If you ticked other means specify.....
5. If you ticked service provider Who is the service provider in your area?  
Council.....Franchise Company.....**(please tick where appropriate)**
6. If you are serviced by the solid waste service provider, do you pay solid waste  
management service fees? YES.....NO.....**(please tick where appropriate)**
7. How do you store your waste within premises? Use of sacks....bins.....plastic bags .....  
**(please tick where appropriate)**
8. If any other to question 6 specify.....
9. What is the common type of Solid Waste do you generate? Kitchen Waste .....  
Paper.....Plastic.....Glass bottle..... **(please tick where appropriate)**
10. Do you have any individuals or companies involved in collection of Solid Waste meant  
for recycling in your area? YES.....NO..... **(please tick where appropriate)**
11. Do you have any individuals or companies involved in collection of Solid Waste meant  
for reuse in your area? YES.....NO..... **(please tick where appropriate)**
12. Are you aware of the economic benefits of the reuse or recycling of solid waste?  
YES.....NO.....**(please tick where appropriate)**
13. If YES to question 12 how is recycling or reuse of economic benefits  
.....
14. Mention any challenges experienced in Solid Waste Management in your area  
.....
15. What recommendations would you give to the above  
challenges?.....



CHONGWE MUNICIPAL COUNCIL

PUBLIC HEALTH DEPARTMENT

**QUESTIONNAIRE FOR SCHOOLS, RELIGIOUS ORGANISATIONS AND MARKETS**

Solid Waste Management Best Available Techniques and Best Environmental Practices UNIDO Project. This questionnaire is aimed at collecting data from the Schools located in the Central District Business, Dam and Ibex residential areas which are within the pilot project area.

1. Nature of business .....
2. Who is the provider of Solid Waste Management services in your area? Council.....Franchise Company.....Other means **(please tick where appropriate)**
3. If none of the above to question 3, how do you dispose of Solid Waste? By Burning.....Burying.....throw by the roadside.....others.....**(please tick where appropriate)**
4. Others means of disposal of solid waste specify.....
5. What types of Solid waste do you generate within your premises? .....
6. How do you store your waste? In sacks, bins, polythene plastic bags any other specify.....
7. Are you involved in any reuse of waste? YES.....NO.....**(please tick where appropriate)**
8. Are you involved in any recycling of waste? YES.....NO.....**(tick where appropriate)**
9. Are you aware of the benefits of reuse or recycling of solid waste? YES.....NO.....**(please tick where appropriate)**
10. If YES to question 10 how?.....
11. Are you involved in any sorting and separation of Solid Waste in your area? YES.....NO.....**(please tick where appropriate)**
12. Do you have companies or individuals that come to collect waste from your premises meant for reuse or recycling? YES.....NO.....**(please tick where appropriate)**
13. Mention any challenges experienced in Solid Waste Management in your area .....
14. What recommendations would you give.....
15. What mechanisms have you put in place to prevent open burning of Solid Waste and burying of Solid waste.....
16. What mechanisms have you put in place to enhance reduce solid waste being dumped at the disposal sites?.....



CHONGWE MUNICIPAL COUNCIL  
PUBLIC HEALTH DEPARTMENT

**QUESTIONNAIRE FOR TRADING PREMISES**

Solid waste management best available techniques and best environmental practices UNIDO Project. This questionnaire is based on the data collected from the traders in the Central District Business which is within the boundaries of the pilot project.

1. Nature of business.....
2. Mention the type of solid waste your trading premises generate?.....
3. Who is the provider of Solid Waste Management Services in your area, Council.....Franchise company.....None of the above..... **(please tick where appropriate)**
4. If you ticked none of the above to question 3 how do you dispose of Solid Waste? by Burning.....Burying.....throw by the roadside.....or other means
5. If it's other means to question 4 specify.....
6. How do you store your waste sacks.....bins.....polythene plastic bags..... other means..... **(please tick where appropriate)**
7. If others to question 6 specify.....
8. Any waste pickers involved in reuse of waste in your area? YES.....NO.....**(please tick where appropriate)**
9. Any waste pickers involved in recycling of waste in your area? YES.....NO.....**(please tick where appropriate)**
10. What is the common type of Solid Waste do you generate? Kitchen Waste ..... Paper.....Plastic.....Glass bottle.....other.....**(please tick where appropriate)**
11. If other types of solid waste specify.....
12. Are you involved in any reuse of solid waste Yes.....No.....**(please tick where appropriate)**
13. Mention any challenges experienced in Solid Waste Management in your area .....
14. What recommendations would you give to the above challenges .....
15. What mechanisms have you put in place to prevent open burning of Solid Waste and burying of Solid waste.....
16. What mechanism have you put in place to enhance zero waste in your are



CHONGWE MUNICIPAL COUNCIL  
PUBLIC HEALTH DEPARTMENT

**QUESTIONNAIRE FOR FRANCHISE COMPANIES**

Solid Waste Management Best Available Techniques and Best Environmental Practices UNIDO Project. This questionnaire is based on the data collection from the Franchise Companies within Chongwe Municipal Council jurisdiction.

1. Name the operational Zone and areas where you do provide Solid Waste Management Services.....
2. During provision of the Solid Waste management services in the above listed areas are you involved in Solid Waste Management sensitisation activities? YES.....NO.....**(please tick where appropriate)**
3. What sensitization strategies do you use? Radio .....TV.....drama.....Door to Door.....other means..... **(please tick where appropriate)**
4. If you ticked other means in question 3 specify.....
5. Any waste pickers involved in reuse of waste in the areas you operate from? YES.....NO.....**(please tick where appropriate)**
6. Any waste pickers involved in recycling of waste in the areas you operate from? YES.....NO.....**(please tick where appropriate)**
7. Are you involved in any reuse of solid waste Yes.....No.....**(please tick where appropriate)**
8. Are there any illegal Solid Waste Collectors in the Zone you are servicing? Yes.....NO.....**(please tick where appropriate)**
9. What measures have you taken to address the issues of illegal Waste Collectors?.....
10. What challenges are you faced with as you provide Solid Waste Management in the areas of your jurisdiction.....
11. What incentives are you giving to the clients you do service.....
12. What mechanism have you instituted to promote recycling of Solid Waste within Chongwe Municipality?.....
13. What mechanism have you instituted to promote reuse of Solid Waste within Chongwe Municipality?.....

## **Appendix B: PUBLIC PARTICIPATION MINUTES**

### **MINUTES OF THE SENSITIZATION AND AWARENESS MEETING HELD IN THE COUNCIL COMMITTEE, CIVIC CENTRE CHONGWE ON TUESDAY, 2<sup>TH</sup> OF JUNE 2020 STARTING AT 10:30 HOURS**

#### **PRESENT**

Mr. Mulowa Sishumba	- Town Clerk
Mr. Mumba Kaoma	- Chief Health inspector
Mr. Ngónka Kateule	- Civil Engineer
Ms. Yvonne k. Mubanga	- Social Economic Planner
Mr. Beene Hector	- Environmental Planner
Mr. Collins Siame	- Senior Health Inspector
Mr. Litiya Mulemwa	- Cleansing Superintendent
Mr. Andrew Mbewe	- Group Accountant Revenue
Mr. Kelvin Siantobolo	- Community Development officer
Mr. Toka Chikango	- Snr Administrative Officer (Minute Recorder)
Mr. Kelvin N. Milunga	- Group Internal Auditor

#### **APPOLOGIES**

Ms Chikonde Musompo - Health Inspector

The meeting was called to order at 10:30 hours there after Mr. Kelvin Siatobo led members in a prayer.

#### **OPENING REMARKS**

The Town Clerk welcomed the members and asked team to embrace the project and urged all to apply themselves fully in order for the project to be a success. Thereafter he declared the meeting officially opened and the Chief Health Inspector led the team into the presentation.

C/01/06/20

## **PRESENTATION BY THE CHIEF HEALTH INSPECTOR – GUIDELINES FOR DEVELOPING MUNICIPAL WASTE MANGEMENT PLAN**

The Chief Health Inspector reported that there was need for the project team to come up and formulate Waste Management Plan which would be submitted to the Councils Standing Committees and ultimately to the Ordinary Council Meeting. The Waste Management Plan would be tailored made to suit the need of the Local rather national and that the draft plan would be ready by the end of June 2020.

Further, he reported that once the Solid Waste Management Plan was formulated, the plan would contribute to the following:

- ✓ Environment by reducing or eliminating adverse impacts on the Local and general environmental and minimize research extraction.
- ✓ Economic by improving economic efficiency, reducing the budget needed for Solid Waste Collection services, treatment and disposal.
- ✓ Social by reducing or eliminating adverse impacts on health and delivering more attractive and pleasant human settlement, better social amenity , sources of employment and potentially a route out of poverty for some of the poorest members of community.

The Chief Health Inspector further guided on the contents of the Waste Management Plan.

The first content of Waste Management Plan was Planning, Projections and Assessment and this involves:

- ✓ Assumption for the Planning
- ✓ Forecasting of Waste Generation
- ✓ Determining of objection for all forecasted activities such as Waste streams, Waste sources, Waste Management options, collection systems, waste management facilities, responsibilities, economy and financing.

Members were also informed that planning of actions included the following measures:

- ✓ Achieving of the set objectives

- ✓ Assessing of available capacities
- ✓ Estimating of expected costs and benefits and
- ✓ Identifying of options for financing costs

It was also reported that the Implementation of Waste Management included the following:

- ✓ Policy /Legal Instruments
- ✓ Economic Instruments
- ✓ Environmental agreements / Partnership
- ✓ Public awareness and communication to stakeholders and
- ✓ Planning of the involved institutions

Members were informed on the implementation programmes and timings of the activities.

Members were also informed on the activities involved in the monitoring and evaluation and the following were the activities:

- ✓ Selecting and describing the actions / initiatives to be monitored
- ✓ Defining the means and the right indicators to measure performance of the applied SWM system
- ✓ Planning the timing of the monitoring and evaluation activities

**C/02/06/20**

**PRESENTATION BY THE SENIOR HEALTH INSPECTOR – PLANNED ACTIVITIES – MR COLLINS SIAME**

**The Senior Health Inspector reported on the planned activities for the month of June. He explained that in order for the project to achieve the desired results, the planned activities would run from 29<sup>th</sup> May to 30<sup>th</sup> June 2020. The following are the planned activities:**



- ✓ The first activity was holding of a meeting to enable the team understand the project and allocating of tasks to members this would be done on the 2<sup>nd</sup> of June, 2020.
- ✓ The second activity would run from 3<sup>rd</sup> to 5<sup>th</sup> June 2020 and that the activity would aim at assessing the current waste management systems which shall include the visitation of all the solid waste management zones in order to identify jurisdiction boundaries.
- ✓ The third activity would commence on the 5<sup>th</sup> to 6<sup>th</sup> June 2020 and that the activity would involve visiting and mapping of the pilot project areas in Madido, Dam Area and Kwamwena
- ✓ The fourth activity would run from 10<sup>th</sup> to 13<sup>th</sup> June 2020 and that involved data collection by the project team and health inspectors which data would assist in developing solid waste management plan.
- ✓ The fifth activity would be held on 15<sup>th</sup> to 16<sup>th</sup> June 2020, and would involve compilation of data and interpretation of the data collected.
- ✓ Sixth activity would run from 17<sup>th</sup> to 19<sup>th</sup> June 2020. And would consist of visiting the designated disposal site and all illegal dumping sites
- ✓ The seventh activity would be held on 22<sup>rd</sup> to 25<sup>th</sup> June 2020 and would involve stakeholders meeting on the awareness of the project and prevention of open waste management and also getting input on solid waste management plan from stakeholders.
- ✓ The eighth activity would be on the 30<sup>th</sup> June 2020 regarding the evaluation of performance and plan for activities for the month.

**C/03/06/20**

**PRESENTATION BY OPEN BURNING BAT/BET MEASURES – PLANNED ACTIVITIES – MR LITIYA MULEMWA**

It was reported that the burning of waste was caused by the following:

- ✓ Structural problem caused by non-collection of waste and also failure by the waste generators to pay for waste
- ✓ Spontaneous ignition of household and at the disposal site
- ✓ Waste picker and unauthorized collection and disposal of waste
- ✓ Unauthorized burning at disposal site and household level

Further, he informed the team on the measures to implement in order to curb the burning of Municipal Solid Waste. The following were the measures:

- ✓ Change the mind set of people about solid waste
- ✓ Increase coverage of waste collection to avoid informal dumping and burning
- ✓ Increase effectiveness of waste collection to avoid informal dumping and burning.
- ✓ Reduction of volume of waste to disposal site this will involve segregation of waste at source and organic materials for composting
- ✓ Improved management at Municipal disposal site

Furthermore, he reported that Waste Management could create business opportunities and among others included:

- ✓ Production of ground and granulated materials such as plastics and pipes
- ✓ Production of goods such as textiles, strings, cord, tubes and building materials

Additionally, members noted that Council could improve Waste Management at the Municipal disposal site and that included the following:

- ✓ Stopping of open burning by waste pickers
- ✓ Limiting access to disposal site areas to facilitate sorting from pickers
- ✓ Organize disposal site to be in cells and fencing it
- ✓ Extinguish fires as soon as detected
- ✓ Knowing all the waste pickers and having unplanned visits at the disposal site.

Members also heard that burning by waste pickers would be curtailed by implementing the following:

- ✓ Organize and educate waste pickers to reduce risks
- ✓ Restrict access to the disposal site / landfills
- ✓ Provide Personal Protection Equipment for the organized waste pickers

Members were further guided on the best practices for disposal of waste and best available techniques and these included

- ✓ Dividing the disposal site into cells
- ✓ Extending disposal site life
- ✓ Eliminating open burning
- ✓ Generating of electricity from biogas – extraction from disposal site
- ✓ Generating of electricity from biogas – Anaerobic digestion

He presented before the members on how to reduce risks from asses containing uPOPS as indicated below:

- ✓ Use of asses from waste burning as fertilizer
- ✓ Ingestion of asses and combusted material by castel at disposal site to food chain
- ✓ Disposal of asses from medical waste incinerators to food chain.

After due consideration it was

**RESOLVED THAT**

The Director of Human Resource and Administration be included on the panel as a bank Signatory.

There being no any other business to transact and the meeting was closed at 12:30 hrs.

Signed .....

Chairperson

.....

Secretary.

**MINUTES OF THE SENSITIZATION AND AWARENESS MEETING HELD IN THE COUNCIL CHAMBER ON THURSDAY, 6<sup>TH</sup> OF MAY 2020**

**PRESENT**

**DEPARTMENT**

Mr. Mulowa Sishumba	Town Clerk
Mr. Mumba Kaoma	Chief Health inspector
Mr. Ngónka Kateule	Civil Engineer
Ms. Yvonne k. Mubanga	Social Economic Planner
Mr. Beene Hector	Environmental Planner
Mr. Siame	Senior Health Inspector
Mr. Litiya Mulemwa	Cleansing Superintendent
Mr. Mbewe	Group Accountant Revenue
Mr. Mutila Stanislaus	Snr Administrative officer (Minute Recorder)
Mr. Kelvin Siantobolo	Community Development officer

**APPOLOGIES**

Ms Lukonde	Health Inspector
------------	------------------

The meeting was called to order at 10:50 hours there after Mr. Ngónka Kteule led members in a prayer.

**OPENING REMARKS –**

The Town Clerk welcomed the members and asked all of them to embrace the project by first of all appreciating that Chongwe District had been selected as pilot project which should give the people of Chongwe an opportunity to live in a clean environment that was to come with the implementation of the project.

Secondly, he encouraged members to be above aboard and show capacity of Chongwe Municipal Council by executing the project efficiently and effectively.

To ensure efficient execution of the project, the Town Clerk urged all members to play their rolls effectively by ensuring that they carried out their assignments diligently all the time and be available all the time.

He emphasized on the point of efficient execution of the project for it will build the image of Chongwe as Council.

With these remarks he declared the project officially opened.

## **PRESENTATION BY THE CHIEF HEALTH INSPECTOR PROJECT BACKGROUND.**

The Chief Health inspector guided that the project was as a result of the partnership between **United Nations Industrial Development Organization (UNIDO)** and **the Zambian Government** through **CHONGWE MUNICIPAL COUNCIL** and the Zambia Environmental Management Agency (ZEMA) to implement a project in Zambia. The Project is titled: **“Promotion of BAT and BEP to reduce the unintentional release of persistent organic pollutants (uPOPs) from waste open burning in SADC sub region”**.

Further, he indicated that there were other players (partners) supporting the Project and would contribute in different categories broken down as follows:

### **FUNDING:**

Funding would be provided by - Global Environment Facility (GEF) are the main funding agent.

### **IMPLEMENTING AGENT:**

**UNIDO** had been picked as project implementing agent.

### **TRAINING AND RESEARCH:**

Training and Research for the project would be provided by UNITAR

### **TECHNICAL SUPPORT AND M&E:**

Technical support would be provided by the Africa Institute.

### **PARTICIPATING COUNTRIES:**

Seven (7) African Countries had been picked to Participate in the pilot project. These include Botswana, Lesotho, Mozambique, Madagascar, Swaziland, Tanzania and Zambia

### **PROJECT RATIONALE**

It was reported that open burning had been ranked first among other uPOPs releases in more than 16 countries.

Other than that, it has been realized that Waste Management is a challenge for most governments in the SADC sub-region because of the general lack of specific infrastructure (Sanitary Landfill, High Temperature waste incinerators, etc.) and insufficient coverage of the topic in schools and in the legislation.

These therefore, prompted for a Regional project to mark the cooperation of all countries under SADC to reduce dioxins and furans emissions by enhancing waste Management systems.

### **OBJECTIVE AND EXPECTED OUT COME**

The team was guided that the main objective of the project was to achieve a sustainable release reduction of uPOPs in the open burning sector through introduction of best available techniques and best environmental practices (BAT/BEP) measures at selected demonstration sites. This should translate into several outcomes such as:

- i. Updated information on current open burning practices and establishing uPOPs baseline inventories.

- ii. Strengthened legislation and Human Resource capacity in implementing BAT/BEP on open burning practices.
- iii. Implementation of BAT/BEP to reduce uPOPs emissions in the open burning sector at national and regional levels.
- iv. Transfer of knowledge on BAT/BEP and awareness raising on uPOPs related risk and exposure on open burning sector.

#### **STATUS OF PROJECT IMPLEMENTATION.**

The Project Coordinator, who is the Chief Health Inspector, revealed the status of the project as follows:

- i. Contract had been signed **BETWEEN ZEMA and CHONGWE MUNICIPAL COUNCIL (CMC)** as the implementing agency on 5<sup>th</sup> April, 2018.
  - ii. Budget had been approved amounting to \$ 87,960.00
  - iii. Two Pilot demonstration sites have been selected and these were Chongwe and Livingstone Municipalities.
  - iv. Waste analysis and characterization studies had been conducted in both pilot.
  - v. Terms of reference for both Municipalities, being in two Comparative Environmental settings, had been done and approved by **UNIDO**.
  - vi. Inception reports for both Municipalities had been submitted.

#### **NEXT STEP**

The Coordinator highlighted that the next step would be that of Implementation of the project in the pilot demonstration sites, Review of legislation and by laws in order to strengthen the waste Management systems, roll out the project activities into other Municipalities and then Monitoring and evaluation of the project.

## **ROLES AND RESPONSIBILITIES OF CHONGWE UNIDO TEAM PROJECT MEMBERS.**

The Senior Health Inspector, Mr. Siame, Informed the members of the project about the team composition who were drawn from departments. He guided that each member or department representative would have a specific roll to play. **The members were as follows.**

- CHIEF HEALTH INSPECTOR
- SENIOR HEALTH INSPECTOR
- CLEANSING SUPRITENDENT
- HEALTH INSPECTOR
- CIVIL ENGINEER
- ENVIRONMENTAL PLANNER
- COMMUNITY DEVELOPMENT
- SOCIO ECOMOMIC PLANNER
- ACCOUNTS DEPARTMENT REPRESENTATIVE
- ADMINISTRATION REPRESENTATIVE
- 

## **RESPECTED ROLLS WERE AS FOLLOWS**

- **Team Leader:**
  - i. Oversee and manage the activities of the Project.
  - ii. Supervision, Evaluation and Monitoring.
  - iii. Approvals of plans and budgets and submits to the Town Clerk.
  - iv. Coordinating of day to day activities of the project.
  - v. Preparation of Plans, Budgets and reports and submit to the Town Clerk and ZEMA.
- **Senior Health Inspector**
  - i. Supervisory, Evaluation and monitoring roles
  - ii. Participate in preparation of plans and budgets and submits to the Chief Health Inspector
  - iii. Involvement in day to day activities of the project
  - iv. Preparation of reports and submission to the Chief Health Inspector.
- **Cleansing superintendent**
  - i. Supervisory, Evaluation and Monitoring roles.



- ii. Preparation of plans and budgets and submits to the Senior Health Inspector.
- iii. Involvement of day to day activities of the project.
- iv. Preparation of reports and submission to the Senior Health Inspector.
- **Health inspector.**
  - i. Health Education/Sensitization
  - ii. Community Mobilization
  - iii. Participating in the day to day project activities as assigned by the Senior Health Inspector and Chief Health Inspector
  - iv. Report preparation and submit to the Senior Health Inspector
  - v.
- **Environmental Planner.**
  - i. Health Education/Sensitization
  - ii. Community Mobilization
  - iii. Participating in the day by day project activities as assigned by the Senior Health Inspector and Chief Health Inspector
  - iv. Report preparation and submit to the Senior Health Inspector.
- **Community Development/ Social Economic Planner**
  - i. Health Education/Sensitization.
  - ii. Community Mobilization.
  - iii. Participating in the day by day project activities as assigned by the Senior Health Inspector and Chief Health Inspector.

iv. Report preparation and submit to the Senior Health Inspector.

• **Civil Engineer**

- i. Monitoring and evaluation.
- ii. Making drawings for Recyclable Collection Centres.
- iii. Report preparation and submission to the Team Leader.
- iv. Perform any other duties as assigned by the project team Leader.

• **Administration Department**

- i. Secretarial Services
- ii. Logistical preparations/ Stationery, transport and any other requirements.
- iii. Preparations and execution of calendar of Meetings as planned.
- iv. Drawing and follow up on Action taken reports to ensure assignments were executed.
- v. Perform any other duties as assigned by the project team Leader.

**FLOW OF FUNDING**

The Cleansing Superintendent Mr. Mulemwa Litiya informed the members that the flow of funding will be in stages. - From one stage to the other.

The stages start from

Preparation of a draft Waste Management plan for the demonstration of best environmental practices (BEP) in Chongwe Municipal Council focused on a Zero-waste policy to Launch of the Project. This is detailed in the Project Budget break down as attached.

Mr. Mulemwa ended by emphasizing that all members needed to be committed to their rolls in order for the project to materialize.

He warned that failure to complete one stage of the project would who lead to the budget line funding held.

There being no any other business to transact and after a prayer from Madam Yvonne Mubanga, the meeting was closed at 13:00 hrs.

Signed .....

Chairperson

.....

Secretary.

**PROCEEDINGS OF STAKEHOLDERS' SENSITIZATION MEETING ON BEST AVAILABLE TECHNIQUES AND BEST ENVIRONMENTAL PRACTICES, HELD IN THE COUNCIL CHAMBER, CIVIC CENTRE, CHONGWE ON 14<sup>TH</sup> JULY, 2020 TO SATURDAY, 18<sup>TH</sup> JULY 2020 AT 9:00 HOURS**

**PRESENT:**

**ORGANISATION / POSTION**

**PROJECT/ COMMITTEE MEMBERS**

Mr. Mumba Kaoma	-	Project Coordinator
Mr. Litiya Mulemwa	-	Cleansing superintendent
Mr. Mutila Stanslous	-	Senior Administrative Officer
Ms Hamamba Naomi Officer	-	Senior Health Environment
Mr. Beene Hector	-	Environmental Planner
Mr.Mbewe Andrew	-	Group Accountant – Revenue
Mr. Mupesha Mwenya	-	Health Inspector

**PRAYER**

A prayer was offered by Mr Mutila Stanslous

**WELL COMING REMARKS**

The moderator welcomed all, both project coordinating team and the stake holders. He thanked the stake holders for having found time to come to attend the presentation. He also indicated that stake holders were invited in groups to avoid large gatherings in order to adhere to Health guidelines so as to guard against Covid 19, starting with Civic and tradition leaders.

**OPENNING REMARKS**

The Director of Human Resources and Administration , on behalf of the Town Clerk welcomed all the stake holders and encouraged everyone to participate fully by even suggesting ideas on how best the project could be implemented.

She reminded the participants to help the community embrace the project by disseminating information to the community in which they live.

She indicated that the group was small, compared to the community of Chongwe, but this was in order to guard against Corona Virus. There will be more groups to come throughout the week up to Friday 17<sup>th</sup> July 2020.

### **NEED FOR STAKEHOLDERS ENGAGEMENT**

Stakeholder engagement was identified as key in enhancing community accepting the project and as Chongwe Municipal Council we identified some major stakeholders to help us in mobilization, sensitization, implementation, monitoring and evaluation to enhance the successful implementation of the project.

The stakeholders invited include Traditional and Civic leaders, Religious or faith based organization, Business Establishments and Senior Citizens within the area where the project will be implemented.

The purpose of the above stated activity was to:

Understand the best approaches for the project to be easily accepted, - Blend the best environmental practices with the community's traditional beliefs, Religious values and any norms so as not to disrupt or introduce a complete change as this may bring the project down.

### **BRIEF BACK GROUND/ OVER VIEW OF THE PROJECT**

The Chief Health inspector guided that the project was as a result of the partnership between **United Nations Industrial Development Organization (UNIDO)** and **the Zambian Government** through **CHONGWE MUNICIPAL COUNCIL** and the Zambia Environmental Management Agency (ZEMA) to implement a project in Zambia. The project was being piloted in Chongwe as well as Livingstone.

The Project is Titled: **“Promotion of BAT and BEP to reduce the unintentional release of persistent organic pollutants (uPOPs) from waste open burning in SADC sub region”**.

Further, he indicated that there were other players (partners) supporting the Project and would contribute in different categories broken down as follows :

**FUNDING :**

Funding would be provided by - Global Environment Facility (GEF) are the main funding agent.

**IMPLEMENTING AGENT :**

**UNIDO** had been picked as project implementing agent.

**TECHNICAL SUPPORT AND M&E :**

Technical support would be provided by the Africa Institute.

**PARTICIPATING COUNTRIES :**

Seven (7) African Countries had been picked to Participate in the pilot project. These include Botswana, Lesotho, Mozambique, Madagascar, Swaziland, Tanzania and Zambia

**PROJECT RATIONALE**

It was highlighted that open burning had been ranked first among other uPOPs releases in more than 16 countries.

Other than that, Waste Management had been realized that it was a challenge for most governments in the SADC sub-region because of lack of specific infrastructure (Sanitary Landfills, High Temperature waste incinerators, etc.) and insufficient coverage of the topic in schools and in the legislation.

These therefore, prompted for a Regional project to make the cooperation of all countries under SADC to reduce dioxins and furans emissions by enhancing waste Management systems.

**OBJECTIVE AND EXPECTED OUT COME**

The gathering was advised that they have been invited to the presentation so that they know and understand the objective of the project which was to achieve a sustainable release reduction of uPOPs in the open burning sector through introduction of best available techniques and best environmental practices (BAT/BEP) measures.

This should translate into several outcomes such as:

- i. Updated information on current open burning practices and establishing uPOPs baseline inventories. Which would be obtained through a research to be conducted.

- ii. Strengthened legislation and Human Resource capacity in implementing BAT/BEP on open burning practices.
- iii. Implementation of BAT/BEP to reduce uPOPs emissions in the open burning sector at national and regional levels.
- iv. Transfer of knowledge on BAT/BEP and awareness raising on uPOPs related risk and exposure on open burning sector.

### **STATUS OF PROJECT IMPLEMENTATION.**

The project Coordinator, who is the Chief Health Inspector, revealed the status of the project as follows:

- i. Contract had been signed **BETWEEN ZEMA** and **CHONGWE MUNICIPAL COUNCIL (CMC)** as the implementing agency on 5<sup>th</sup> April, 2018.
- ii. Budget had been approved amounting to \$ 87,960.00
- iii. Two Pilot demonstration sites have been selected and these were Chongwe and Livingstone Municipalities.
- iv. Waste analysis and characterization studies had been conducted in both pilot.
- v. Terms of reference for both Municipalities, being in two Comparative Environmental settings, had been done and approved by **UNIDO**.
- vi. Inception reports for both Municipalities had been submitted.

### **NEXT STEP**

The coordinator highlighted that the next step would be that of Implementation of the project in the pilot demonstration sites.

The meeting was about the implementation process that was a more reason why stake holders were brought on board.

### **DANGERS OF OPEN BURNING /INDISCRIMINATE DISPOSAL OF WASTE**

- i. Air pollution
- ii. Water pollution
- iii. Soil pollution
- iv. Disease infection
- v. Global warming

### **STAKE HOLDERS QUESTIONS AND CONTRIBUTIONS**

### **CHALLENGES.**

The community highlighted the following as challenges that lead to poor management of waste or indiscriminate disposal of waste as follows:-

- i. Inconsistence of waste collection by service providers. This led to collected waste being disturbed by dogs and supports flies which were a vector of disease.
- ii. No service provider in some areas.
- iii. Distant placed skip Bins
- iv. None effective implementation of the Recycling process. Prolonged or sometimes none take off of projects after sensitization.

**STAKE HOLDERS SUGGESTED MITIGATING FACTORS TO CHALLENGES**

- i. Promote idea of waste management to start at source/at waste generation point by sorting.
- ii. Do more sensitization of the community about the whole idea.
- iii. Place more well labeled skip bins in more strategic areas so that it is easier for community to dump waste in a sorted manner.
- iv. Council to facilitate for coming of recycling companies to chongwe so that waste pickers can see business opportunity.

**OTHER NEEDED MEASURES THAT WOULD ADD VALUE TO THE PROJECT**

- i. Bring on board traditional leaders for the project to secure more Land for creation of disposal sites, far from residential areas.
- ii. Ensure current and future disposal sites are treated or managed well to avoid flies which were a conduit of disease into community.
- iii. Ensure that current and future disposal sites were fenced off to avoid scavengers.
- iv. Council, through the project, should consider adopting the burial sites in chongwe to enhance their maintenance and could be a source of revenue.
- v. Through this project, and with help of traditional leadership, Council should secure more Land for bigger burial sites to provide for the growth of the district.

- vi. Ensure that disposal site worker's health is taken care of by equipping them with PPEs and taken for medical checkups.

## **SOLID WASTE MANAGEMENT STATUS IN CHONGWE (SIAME COLLINS)**

In order for the project to assess the position of waste management in Chongwe, the project conducted a research in several areas of chongwe.

### **Areas of research included**

- i. Dam Area
- ii. Ibex area.

### **Target organizations**

- i. Schools
- ii. Trading premises
- iii. Faith based organisations
- iv. Residential areas(within the pilot project area)Dam and Ibex areas
- v. Liquor stores.
- vi. Solid waste management franchise companies
- vii. Recycling companies.

### **Method of Research**

Different questionnaires depending on the type of institution and how they were involved in solid waste management.

### **Sample Size**

Our sample was 168

### **Sampling Method**

Systematic sampling methods

### **Research Report**

**See research report attached (Appendix "B")**

## **ACTIVITIES DURING PROJECT EMPLEMENTENTION (Mr Litiya Mulemwa)**

**The following were identified as causes of open burning**



- i. Delayed collection of waste - people cannot pay.
- ii. Waste pickers (at disposal site) and also unauthorized collection and disposal
- iii. Spontaneous ignition of household and at the disposal site
- iv. Unauthorized burning (at disposal site and household level)

**Ultimate aim / goal of the project.**

- i. Change people's thinking about waste through sensitization.
- ii. Engage stake holders in sorting of waste at point of generation.
- iii. Engage Franchise companies in the business of waste management.
- iv. Employment creation in the business of waste management.
- v. Well streamlined waste management process.
- vi. A clean and pollution free environment.

Signed .....  
Project Coordinator Secretary

APPENDIX C : Detailed Action Plan

Objective 1	<b><i>To provide adequate and affordable municipal waste collection service.</i></b>										
Strategic Focus	Actions	Baseline (2020)	Target	Indicator	2020	2021	2022	2023	2024	2025	Responsible Officer
<b><i>Provide effective and efficient municipal waste collection services</i></b>	Conduct surveys to understand the existing waste collection system, costs and challenges in the waste zones	1	7	# Zone Assessment Reports	1	1	2	1	1	1	DPH
	Identify the most suitable waste collection system and frequency for each residential area (door-to-door collection for urban residents and communal collection for peri-urban/ rural residents).	7	42	# of reports	7	7	7	7	7	7	Cleansing Superitendent
	Encourage the involvement of informal sector/ community groups in primary waste collection.	1	5	CBE contracts	1	1	1	0	1	1	Cleansing Superitendent
	Conduct enforcement activities visits in all the seven (7) zones to eradicate illegal waste providers	8	42	# of zonal visits conducted	8	7	7	7	7	6	Cleansing Superitendent
	Promote the use of appropriate types of vehicles in sufficient numbers for secondary collection										

	and transport to the Disposal site.										
	Establish functional financial mechanism for vehicle maintenance to increase productivity	2	12	# of job card received for the vehicle worked on.	2	2	2	2	2	2	Engineering department
	Establish proper waste collection fee system proportionate to the costs of waste collection	10	72	# of hh subscribing for waste collection/total # hh	10	12	12	12	12	12	Cleansing Superintendent
<b><i>Introduce waste separation at source</i></b>	Conduct a study to identify an effective waste separation programme (number of types) based on the current market for recycling materials, vehicles and informal sector involvement	1	6	# of research Reports	1	1	1	1	1	1	DPH
	Integrate waste separation and 3R promotion activities into the school education system to influence behavior with regard to the new waste management system	0	42	# of schools visited	7	7	7	7	7	7	SHEO
<b><i>Integrate the private and informal sectors as partners in</i></b>	Conduct a study to understand the current operation and challenges to involving the private and informal sectors in operating waste management businesses	1	6	# of complaints from clients	1	1	1	1	1	1	SHI

<b><i>the delivery of sustainable waste management</i></b>	Engage informal waste pickers through education and training on waste handling procedures to reduce vulnerability and strengthen skills	0	6	# of trainings conducted		2	1	1	1	1	SHEO
	Establish necessary supporting rules, regulations and policies to encourage participation of private and informal sectors in waste businesses.	0	6	# of laws passed	0	2	1	1	1	1	DPH
<b><i>Improve infrastructure for waste collection, storage, transfer and transport</i></b>	Examine and identify suitable technology and equipment for waste collection, storage and transport appropriate to local capacity	5	7	# of companies contracted	5	1	1	0	0	0	Cleansing Sup
	Establish training and capacity building for waste staff to ensure proper operation and maintenance of the equipment	1	24	# of capacity building sessions conducted	1	4	4	4	4	4	SHEO
	Secure sufficient funds for investment and maintenance of equipment	1	6	Total amount in annual budget	1	1	1	1	1	0	Chief Accountant
<b>Objective 2</b>											
<b>Strategic Focus</b>	<b>Actions</b>	<b>Baseline (2020)</b>	<b>Target</b>	<b>Indicator</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>Responsible Officer</b>

<b>Reduce organic waste sent to the Disposal site</b>	Assess organic waste (food waste) reduction potential from households, markets, shopping malls and other enterprises.										
	Plan for establishment of Recyclable Waste Collection facility	1	3	# of RCC planned	1		1		1		DPH
	Establish the appropriate waste collection system for waste generated	1	6	# of effective waste collection system in place	1	1	1	1	1	1	Cleansing superintendent
	Establish awareness-raising programme on source separation of waste	5	24	# of sessions conducted							SHEO
	Initiate programme to encourage use of compost products for urban farming and city greening	0	6	# of community groups encouraging composting	1	1	1	1	1	1	SHEO
<b>Increase recovery of additional material at disposal site</b>	Assess the potential for additional recovery of high calorific value materials at the disposal site.	12	144	# of recyclables trips undertaken	12	24	24	24	24	24	Cleansing Superintendent

<b><i>Establish a new sanitary Disposal site meeting engineering standards for final disposal</i></b>	Rehabilitate existing Disposal sites in the short-term	1	24	Reports	1	4	4	4	4	4	CleanSing Sup
	Establish a sanitary Disposal site with minimum requirements, including landfill liner system, leachate collection and treatment, ground water monitoring wells, cover for operations, final cap over decomissioned landfill and plans for maintenance and closure in the middle-term	0	1	# of	0	1	0	0	0	0	DPH
	Establish operational Disposal site in the long-term to treat the residual waste that cannot be addressed by any other methods.	0	6	# of Site visit/Report	0	1	1	1	1	1	DPH
<b><i>Establish Mechanisms to Discontinue the Operation of Illegal Dumping Sites in The District</i></b>	Conduct a quick study to identify the location of illegal dumping sites and the relevant factors contributing to for their operation	2	7	# of Reports	2	1	1	1	1	1	SHI
	Provide waste collection services to all the residents in the area	75	100%	# of contracted Franchise/CBE companies	75	78	80	90	95	100	Cleansing Superintent
	Conduct awareness programmes aimed at educating residents on the negative impacts of the open dumping and burning	8	48	# Reports	8	8	8	8	8	8	SHEO

	Establish a monitoring system that emphasizes community participation aimed at preventing illegal dumping	1	6	# of charged illegal waste collectors	1	1	1	1	1	1	Cleansing Superintendent
<b>Objective 3</b>	<b><i>To construct the Recyclable Collection Center and 7 mini RCC for increased participation in sorting of waste at source, reuse and recycling of waste.</i></b>										
<b>Strategic Focus</b>	<b>Actions</b>	<b>Baseline (2020)</b>	<b>Target</b>	<b>Indicator</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>Responsible Officer</b>
<b><i>Construction of the District RCC and Mini RCCs in the 7 Waste Zones</i></b>	Conduct Site Identification Tours in all the Waste Zones	5	42	# of reports done	5	7	7	7	7	7	Cleansing Superintendent
	Conduct Feasibility Studies for construction of the RCCs in Various locations	1	3	# of reports done	1		1		1		DPH
	Approvals	0	3	0							
	Preparation of Plans and BOQs	1	3	Plans/BOQs done	1		1		1		Civil Engineer
	Construction	0	3	Stage Inpection/ Reports done	1		1		1		Civil Engineer
<b>Objective 4</b>	<b><i>To develop capacity, wareness and advocacy in implementing waste management</i></b>										
<b>Strategic Focus</b>	<b>Actions</b>	<b>Baseline (2020)</b>	<b>Target</b>	<b>Indicator</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>Responsible Officer</b>

<b>Mainstream environmental education and waste management in school curricula and programmes</b>	Support curriculum development or integration of environmental education and waste management topics as required	0	6	Reports	0	1	1	1	1	1	SHEO
	Select and disseminate best practices of integrating environmental education and waste management in the school curricula and communities	0	12	# of sessions conducted	0	2	2	2	2	2	SHEO
	Monitor and evaluate environmental education and waste management practices with a view towards continuous improvement and replication, especially among educational institutions.	0	12	# of M & E session conducted	0	2	2	2	2	2	SHI
	Conduct annual Waste Management Summits, capacity development activities and other awareness-building campaigns together with partners for selected target groups; monitor impacts and adjust social marketing and advocacy campaigns strategies as		6		1	1	1	1	1	1	DPH



	necessary.										
	Use multimedia (radio, television, drama, workshops, public announcements, notices) for raising public awareness on environmental and proper waste management practices	4	24	# of awareness sessions conducted	4	4	4	4	4	4	SHEO
<b>Objective 5</b>	<b><i>To provide sustainable services through regular review, monitoring, innovation and improvement.</i></b>										
<b>Strategic Focus</b>	<b>Actions</b>	<b>Baseline (2020)</b>	<b>Target</b>	<b>Indicator</b>	<b>2020</b>	<b>2021</b>	<b>2022</b>	<b>2023</b>	<b>2024</b>	<b>2025</b>	<b>Responsible Officer</b>
<b><i>Establish a data collection mechanism</i></b>	Institute a coordinating committee comprised of key departments and stakeholders to review the progress	1	6	# of meeting held	1	1	1	1	1	1	SHI
	Designate/update a data management system for tracking progress associated with implementing the strategic plan	1	6	Action Plan	1	1	1	1	1	1	SHI
<b><i>Establish a reporting</i></b>	Present reporting of monitoring activities as an annual report										

<b><i>mechanisms</i></b>	Prepare and update an overview of each proposed objectives, targets and activities and their achievements, challenges and how these challenges are addressed	<b>1</b>	<b>6</b>	<b># of stakeholders meetings done</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>Cleansing Superintendent</b>
	Establish a communication mechanism to ensure regular consultation among key stakeholders	<b>6</b>	<b>24</b>	<b># of meeting held with Stakeholders</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>3</b>	<b>SHI</b>
	Disseminate information to Chongwe residents via diverse platforms	<b>8</b>	<b>24</b>	<b>Reports</b>	<b>8</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>2</b>	<b>SEHO</b>
	Allocate sufficient budget for monitoring communication activities	<b>1</b>	<b>6</b>	<b>Annual Budget/ Requests</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>	<b>1</b>		<b>Cleansing Superintendent</b>