



**UNIVERSITY OF ZAMBIA**  
**IN CONJUNCTION WITH**  
**ZIMBABWE OPEN UNIVERSITY**  
**INSTITUTE OF DISTANCE LEARNING**

**(IDE)**

**SOCIAL AND ECONOMICAL IMPACT OF A SOLID WASTE MANAGEMENT  
SYSTEM ON THE RESIDENTS OF CHONGWE**

**BY**

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**SUBMITTED TO THE ZIMBABWE OPEN UNIVERSITY IN PARTIAL  
FULFILLMENT OF THE REQUIREMENTS FOR MASTER OF BUSINESS  
ADMINISTRATION**

**(MBA)**

**LUSAKA, ZAMBIA**

**YEAR 2017**

**ZIMBABWE OPEN UNIVERSITY**

**RELEASE FORM**

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**TITLE OF PROJECT:** Social and Economic impact of a Solid waste Management System on the Residents of Chongwe.

**PROGRAMME FOR WHICH**

**PROJECT WAS PRESENTED** Master of Business Administration (MBA)

**YEAR GRANTED** 2017

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## **DEDICATION**

To my beloved husband Michael and my children Mumbi, Samantha, Natasha and little Noah who endured so much during this research.

## **ABSTRACT**

Zambia, like many other third world countries is experiencing unprecedented population growth of cities and towns. This is evidenced through the rate of urban growth, Chongwe district is no exception. Chongwe district is developing at a fast rate due to over population in Lusaka. The total number of residents was recorded as 192,303 in 2010 (CSO 2010) with a steady growth rate of 4% per annum, it is estimated that currently the population is 238,455 with 22,000 households and 250 business premises. This means that the generation of waste has increased from the amounts recorded in 2010 to the current figures which will be recorded in 2017.

The increase in the population figures has a series of implications on every aspect of people's socio-economic and cultural life style. The provision of safe and clean water, electricity, and housing for instance has become inadequate and hence solid waste generation and disposal has become a serious challenge. Solid waste management systems play a significant role in the management of waste where an appropriate system is structured and effectively implemented

The purpose of this study was to evaluate the social and economic impact of a solid waste management system of Chongwe residents. The objective of the study was to carry out an assessment of how an effective Solid waste management system would affect the residents of Chongwe socially and economically. In this research, an effective solid waste management system is considered to be a system that provides for the effective storage, collection and disposal of waste to prevent disease and any other effects. The research methodology used was descriptive and both qualitative and quantitative analyses were accommodated. The results

in this study are based on three residential and fifteen commercial premises of Chongwe. This research reviewed a number of national and local reports on solid waste management in order to understand the national and local state of the field. It also used the direct interview technique and questionnaire administration to obtain data on the social and economic aspects of the research. It is also important to understand that a waste management system should ideally consist of environmentally acceptable waste management practices that are aimed at minimizing waste generation from both domestic and industrial/commercial activities.

This study determined that in order for a solid waste management system to be effective, there has to be collaboration between the community participation and government. Local government authorities are entrusted with the responsibility for the provision of solid waste collection and disposal services. It is the responsibility of the local government through the respective councils to establish technical agencies that will authorize contracting of private enterprises and informal businesses (community based enterprises) to provide waste management services. This study also concluded that involving formal and informal sectors in the management of waste will improve service delivery and provide social and economic empowerment for the residents and the various sectors involved.

## **ACKNOWLEDGEMENTS**

The production of this thesis would not have been possible without the work of a number of people and I would like to acknowledge their support.

I would like to thank God almighty for granting me good health and strength which made it possible to study this MBA programme without whom, this would not have been possible.

Firstly I would like to thank my supervisor Dr Serah Mbetwa, who despite the distance ensured my thesis, reached the required standard. Further, I would like to acknowledge her contribution and expertise in the field of study.

I am indebted to Mr Musaiwale Mwewa of Policy Research Institute (PRI) for the contribution and guidance that was rendered during this research. I would like to thank the staff of Chongwe district council most especially the Town clerk for allowing me to collect data within Chongwe district.

Special thanks to my husband Michael Nkandu, to whom I am sincerely grateful for the financial and moral support he gave me and I dedicate this to him. Lastly but not the least to my children, family and friends for the encouragement and support rendered to me. Many thanks go to the various authors and scholars whose works have been cited extensively in the research.

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## **CHAPTER I**

### **INTRODUCTION**

This chapter will highlight the history of solid waste and its related problems in Zambia. Further, it will discuss the statement of the problem and highlight how this problem is affecting the communities especially the residents of Chongwe. It will also discuss the research objectives and limitations of the study.

#### **1.1 BACKGROUND TO THE STUDY**

Solid waste management is a critical issue in many developing countries like Zambia. Cities are confronted with increasing volumes of solid waste generated by residential, commercial, and industrial activities (USEPA, 2002b). According to the National Solid Waste Management Strategy for Zambia, (2004) the country is faced with a critical waste management problem, which is threatening the health of the people of Zambia, socio-economic development as well as the environment. The Major concerns among others include: Littering, uncollected garbage, and indiscriminate dumping of waste; Improper handling of hazardous wastes; Health hazards due to indiscriminate disposal of waste, Low standards of operational disposal sites; and Potential for contamination of soils and underground/surface water from operations of disposal sites. However, this problem has its roots in even the earliest civilizations. In developing countries or countries with economies in transition, waste management often emerges as a problem that endangers human health and the environment. To make matters worse, waste

management usually has a low priority on the political agenda of such countries, as they are struggling with other important issues such as hunger, health problems, water shortages and unemployment. Solid waste management has become an issue of concern for public health and environmental protection agencies in many developing countries. Its social and economic importance cannot be avoided. However, even though the need for an adequate MSWM system is shared by both the public and private sector, the implementation of efficient systems for proper MSWM is still a social and economic challenge.

As population and industrialization increase, so does the generation of solid waste, and thus management problems become more challenging. These environmental impacts have increased pressure on the public authorities to develop policy options and other mechanisms to deal with this problem. Specifically, the need to improve municipal solid waste management (MSWM) expresses the requirement for sustainable economic activity and the need for mankind to remain in harmony with the carrying capacity of the earth. Generally, refuse generation, storage and disposal have been a problem in developing countries such as Zambia. Improper handling of solid waste causes serious damage to the environment and may increase the probability of serious impacts on public health (italo, 2014)

The term solid waste is defined as all waste arising from human and animal activities and is solid in nature (Tchobanoglous et al 1993). Also according Basel convention (1989) wastes are substances or objects, which are disposed of or are intended to be disposed of or are required to be disposed of by the provisions of the national law. Solid waste is a natural consequence of human activities which has an impact on ecosystem services.

## **1.2 STATEMENT OF THE PROBLEM**

The management of various types of waste has over the years been a very difficult and challenging issue. This difficulty has manifested itself in the perennial outbreak of diseases such as cholera, dysentery and pollution of water resources, air, soil or land contamination, proliferation of pests and vermin, and the loss of aesthetic beauty. (National Solid Waste Management Strategy for Zambia, 2004) Due to unprecedented growth in many developing countries, there has been a massive increase in waste being generated that is in need of ultimate disposal. Increased urbanization and industrialization has led to an increase in waste generation and its mismanagement. Cases of cholera, dysentery and other debilitating illnesses have robbed employers of the much needed manpower through loss of employees and man hours due to illness. The economic costs of waste mismanagement are insurmountable. The costs of unblocking drains, flooding in many peri urban areas, land degradation and water pollution are some of the economic problems that the Zambian Government through its disaster management unit encounter annually.

According to Kabungo and Tesnik (2007) in Lusaka, a total number of more than 400 thousand tonnes of waste is produced on a yearly basis with only about 40% of it arriving at the dumpsite for safe and proper disposal.

It is very common to see the heaps of refuse littering the major streets in the city. This is a reflection of the poor refuse management techniques in the city (Omuta, 1987). In Chongwe, littering, uncollected waste and indiscriminate dumping of waste is the evidence of the inexistence of waste management system within the local authority and the community.

Without an integrated waste management system, Chongwe district council is unable to manage huge amounts of waste being generated on a daily basis across the district.

It is in this view that this research will discuss to a greater extent the social and economic effect of an effective waste management system.

### **1.3 PURPOSE OF THE STUDY**

The purpose of my study is to evaluate the effectiveness of a solid waste management system and its social and economic impact on the residents of Chongwe district. This study will also come up with workable solutions and initiatives that can be employed by both the local authority (Chongwe district council) and other stakeholders in the management of waste with the emphasis on economic and social gain.

### **1.4 RESEARCH QUESTIONS/SUB PROBLEMS**

An evaluation of the effectiveness of a solid waste management system on the social and economic status of the residents of Chongwe. A case study of Chongwe district.

#### **General objective**

- To evaluate the effectiveness of a solid waste management system on social and economic status of the residents of Chongwe.

### **Specific objectives**

- To ascertain the characteristics of solid waste management practices in Chongwe
- To establish an understanding of the perception among local communities about solid waste management for sound economic and social development.
- To investigate the social and economic impacts of solid waste management system in Chongwe
- To assess how improved solid waste management practices can contribute socially and economically to development in Chongwe district.

### **Specific research questions**

- What are the solid waste management practices currently in Chongwe?
- What are the perceptions of local communities about waste management for social and economic empowerment?
- How does effective solid waste management affect the local community and the district council in Chongwe socially and economically?
- How can sustainability of an effective waste management system be ensured?

## **1.5 SIGNIFICANCE OF THE STUDY**

Solid waste management in Chongwe is important like in many other cities of developing countries this study will benefit the local authority and the Zambian government in a way that it will improve on the solid waste management system for the district of Chongwe and any other areas. The need to understand and manage a system is very important as it has an impact



on the residents of the respective locality. As one of the sustainable development goals (SDGs) of 2020, safe disposal of waste has both a social and economic impact on any society. The presence of uncollected waste on the streets is not only an eyesore but is detrimental to our society and our health in general. Recyclable waste, biodegradable waste present at the landfill tells a story of how waste management leaves a lot to be desired.

This research will generate information that would assist in enhancing good governance and quality service delivery. Other key beneficiaries include the community (residents), ministry of local government and housing, Chongwe district council members of parliament and councilors. Apart from enhancing and improving the researcher's skills and knowledge, the findings will be used to enhance or improve the solid waste management system not only for Chongwe district council but also for other local authorities' country wide. The study will seek to provide recommendations which will augment on efficient and effective solid waste management services by enlightening what ought to be done, as every resident is entitled to a decent clean environment free of refuse.

On an academic perspective, this research can be used by both scholars and professional individuals to add up to the available data banks of research information.

For the stakeholders under research, the information deduced through this study can be used as corrective measures and yardsticks. The research will add value to the systems and processes in the effective management of solid waste as it will discuss social and economic impact of waste management and suggest possible solutions that will promote sustainable waste management solutions.

The importance of this study is also that it is a prerequisite for any student attempting to fully complete studies of Master of Business Administration at Zimbabwe open university/University of Zambia to write a thesis.

## **1.7 OPERATIONAL DEFINITION OF TERMS**

This section defines operational terms used in this study. This has been done to ensure that readers are familiar with the terms that have been operationalized in this study.

**Solid waste** in this context is defined as any biodegradable or non-biodegradable matter that is no longer useful and is in need of final disposal. The Environmental Protection and Pollution Control Act (EPPCA) amended in 1999, Cap 204 of the Laws of Zambia defines solid waste as garbage, refuse, sludge, and other discarded substances resulting from industrial and commercial operations and from domestic and community activities. This includes such classes of waste as hazardous including waste oils, and wastes arising from mining activities excluding gaseous waste and wastewater.

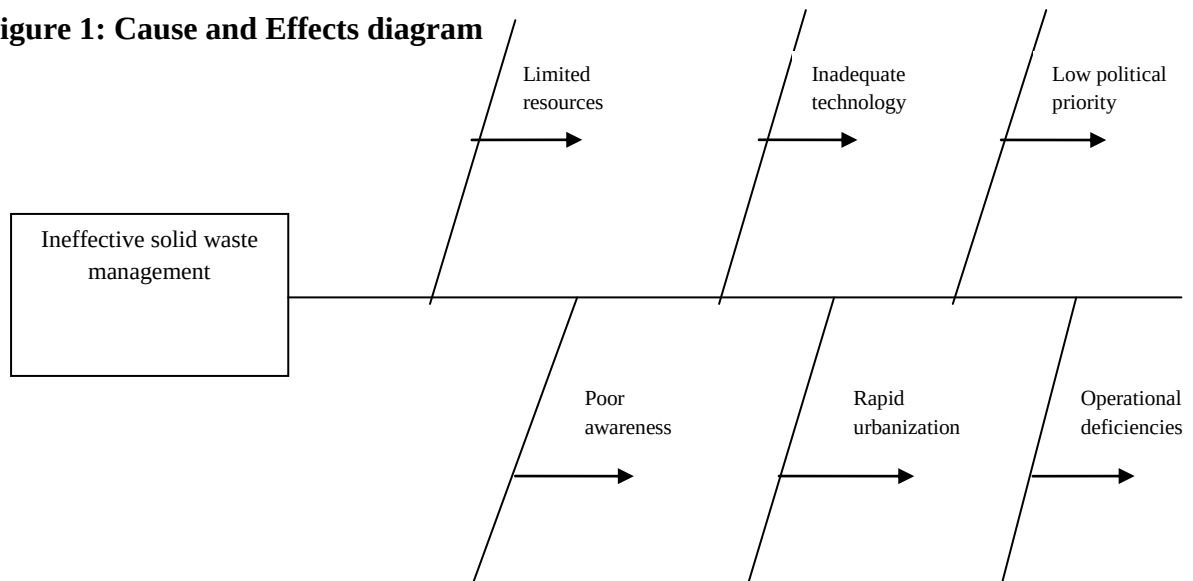
**Solid waste Management:** this is operationalized as a system with which solid waste is managed from point of generation to final disposal. According to Mutesu (2009) it is a discipline associated with the control of generation, storage, collection, transfer and transport, processing, and disposal of solid waste in a manner that is in a manner that is in accord with the best principles of Public Health, economics, engineering, conservation, aesthetics, and other environmental considerations, and that is also responsive to public attitudes.

**Community based enterprises:** these are local groups within the community. According to Mubaiwa (2003) community based enterprises are groups formed within a local community for the purpose of service delivery or production business, usually low capital intensive and consisting of an individual or up to about 20 persons, either registered or operating informally in an area. These have proper leadership structures where gender equality was greatly encouraged to ensure that women take up positions of leadership

## 1.8 CONCEPTUAL FRAMEWORK

This study's conceptual framework was derived from the cause and effects model which was devised by Professor Kaoru Ishikawa. It is illustrated in the fishbone diagram below and it proposes the causes of ineffective service delivery to be: limited resources, poor awareness, inadequate technology, rapid urbanization, low political priority and operational deficiencies.

**Figure 1: Cause and Effects diagram**



It is based on a collaborative, feasible and mutually beneficial programme for the management of solid waste in Chongwe district. The key stakeholders of the framework are the Chongwe district council, businesses and institutions that operate in Chongwe, residents who pay for waste removal services, the ministry of local government, the ministry of health and community development and academic research institutions.

The framework proposes a model in which the unemployed who live within Chongwe are provided with employment for the purpose of collecting and managing waste, and for dissemination of information during collection, disposal of waste on the benefits of the proper disposal of waste, personal hygiene and environmental sanitation, the efficient disposal of waste, and improved quality of life.

The ultimate beneficiaries of the study are the residents of Chongwe especially the urban poor and the unemployed. The frame work ensures job creation, the alleviation of poverty, efficiency in management and disposal of waste, and the provision of better managed and more accountable waste removal and disposal services in Chongwe.

Solid waste management has been a very difficult and challenging issue in the country. The country is faced with a critical waste management problem, which is threatening the health of the people of Zambia, socio-economic development as well as the environment. Improper handling of MSW could cause serious damage to ecosystem services by increasing water, soil and air pollution.

### **Limited resources**

Effective solid waste management depends upon an equitable distribution of responsibilities, authority, and revenue between national government and all local governments. However, local governments usually lack the necessary authority and resources to provide a satisfactory and economically viable service. Local government authorities have insufficient financial resources, lack of interdepartmental co-ordination, particularly in issues relating to staffing, planning, operations and maintenance (Lombard, 2003; Chinamo, 2003). Local government agencies may have a regular budget allocation for wages and operating costs, but may not be able to obtain funds for large capital projects, such as the replacement of a vehicle fleet or the construction of a sanitary landfill. For such capital expenditures they may depend on unpredictable grants from central government or official development assistance from another country. Finances whether for capital or recurrent expenditure, take precedence for other municipal purposes - of budget allocations intended for waste management.

### **Poor awareness**

Awareness can be viewed as a critical issue in waste management. People's attitudes towards waste storage and collection depends on how the authorities will provide adequate information this information includes the need to management waste effectively, the availability of waste collection services and the need for the residents to pay for the service. The council faces challenges in its execution of duties and dissemination of information is one of them. They are a number of statutory instruments concerning waste collection and disposal and the council could be able to implement these. In Chongwe, the hurdle has been the unplanned nature of the

district. Many houses and buildings are mushrooming in unplanned settlements and thus accessibility in these areas has been hard.

Knowledge is power, but if it is not correctly delivered to the intended persons, it does not serve a purpose. Environmental awareness is not the same thing as environmental behavior. People may well see the benefit for the environment of using reusable or recyclable products, but their social needs may take them stick to traditional patterns. Price and convenience are two essential factors here.

### **Inadequate technology**

Waste management is an issue that is facilitated with the availability of appropriate technology without which waste mismanagement occurs. Chongwe district council is faced with this difficulty. Most of its fleet of transport is either obsolete or malfunctioning. The only tractor available is constantly in the garage. The council does not have any waste trucks, skips or bins but relies on the clients to provide for themselves otherwise it facilitates indiscriminate disposal.

### **Rapid urbanization**

With the increase in population, rapid urbanization is eminent. The council has a difficulty of planning the district because most of it is traditional land. Rapid urbanization brings out a number of issues such as inaccessible roads, unplanned housing and no provision of important services such as water.

Rapid urbanization has increased the amount of waste generated per capita per day. With the increase of uncollected waste, diseases such as cholera and dysentery are unavoidable.

### **Low political priority**

In developing countries and countries with economies in transition, waste management often emerges as a problem that endangers human health and the environment. To make matters worse, waste management usually has a low priority on the political agenda of such countries, as they are struggling with other important issues such as hunger, health problems, water shortages, unemployment and even civil war. In such situations, it is easy to understand why waste problems have a tendency to grow steadily.

Sanchez (2004) explains that many of the origins of hostility towards waste collection service delivery are to do with attitudes, perceptions and prejudices, rather than facts. In some countries senior local government officials may be accustomed to autocratic control of certain functions and of their subordinate employees. Political interference Political leaders are elected to serve the interest of the citizens, but some use their authority for personal reasons or to disrupt processes that should be the responsibility of technical or accountancy staff.

### **Operational deficiencies**

As earlier discussed, the council only has one tractor that has to ferry waste from all parts of Chongwe. This has been a problem as the collection times or days have to be increased as waste piles up. For instance, waste can only be collected once a month. This is a danger in

itself. The council also does not have a waste management unit. It operates through the works department and as such, the expertise needed does not exist.

Ehler and steel (1965) explain that the objective of solid waste management is to minimize adverse environmental effects caused by indiscriminate disposal of solid waste. They further discuss that there are six management functional elements associated with management of solid waste from the point of generation to the point of disposal, these being:

- Waste generation
- Onsite handling
- Collection
- Transfer and transport
- Processing and recovery
- Final disposal

According to Sakai et al, (1996) the way solid waste is managed for different types of sectors is important as the nature of each industry or sector varies. The dynamic nature of consumer/end user products, packaging materials, environmental regulations and public attitudes has made the development of solid waste management strategies an increasingly complex task.

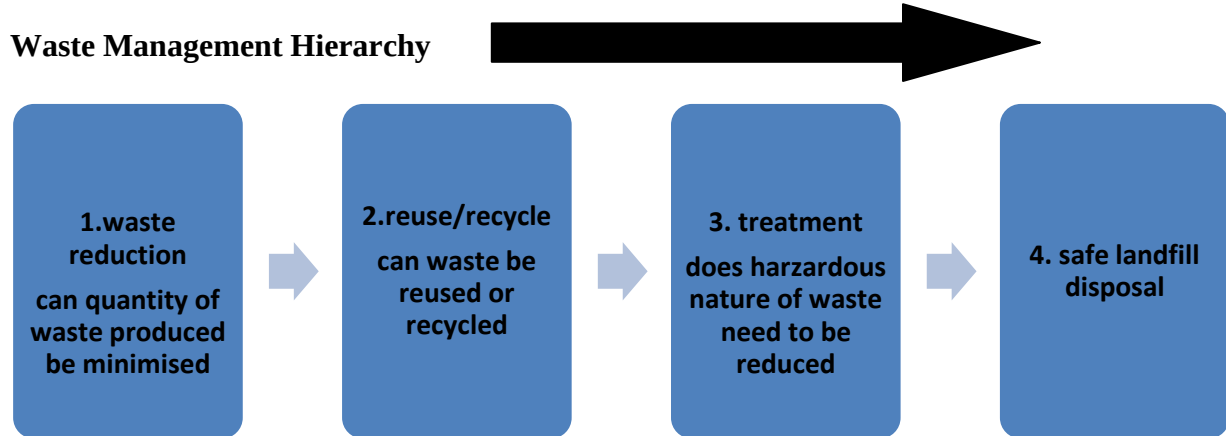
### **1.8.1 Waste Management systems**

Every country or city aims at establishing sustainable waste management systems. According to the National Solid Waste Management Strategy (2004) a waste management system should



ideally consist of environmentally acceptable waste management practices that are aimed at minimizing waste generation from both domestic and industrial/commercial activities. Further, the system must provide for the protection of human health and the environment. All stakeholders shall follow the waste management hierarchy system. Figure 1 illustrates the components of an ideal waste management system, which involves minimization/reduction, re-use and recycling, pre-treatment/treatment and disposal of waste in an environmentally sound manner.

**Figure 2 Waste management Hierarchy**



(Source: Botswana Waste Management Strategy 1998)

SWM encompasses the functions of waste reduction, reuse/recycle, treatment and safe landfill disposal. The scope of SWM system encompasses planning and management systems, waste generation processes, and organizations, procedures and facilities for waste handling.

According to Schübeler et al (1996) the first goal of SWM is to protect the health of the population, particularly that of low-income groups. Other goals include promotion of environmental quality and sustainability, support of economic productivity and employment

generation. Achievement of SWM goals requires sustainable solid waste management systems, which are adapted to and carried by the municipality and its local communities. Development strategies comprise specific objectives and measures in these areas.

Involving the private and informal sector in waste collection, transportation and disposal is of key economic importance not only to Chongwe district council but to the Zambian government.

According to Kabungo and Tesnik (2007) the implementation of a solid waste management system can be used as a tool to:

- reduce the amount of waste generated
- reduce the proportion of hazardous waste in the waste generated
- segregate hazardous waste for special handling and disposal
- encourage recovery, reuse and recycling of wastes
- support cost-effective solid waste collection, transport, treatment and disposal systems
- minimize adverse environmental impacts related to solid waste collection, transport, treatment and disposal systems, and
- generate revenues to cover cost

## **LAWS RELATING TO SOLID WASTE MANAGEMENT**

A number of laws pertaining to solid waste management were reviewed in order to understand or define important concepts in waste management. These include; Public Health Act 295, Local Government Act 281, Statutory Instrument no 71 of 1993, Environment Protection and Pollution control Act Cap 204, Radiation Act of 1975 including some International Conventions related to Waste Management

### **1.9 SCOPE OF STUDY**

The study is aimed at senior officers, middle management and other senior support staff at the Chongwe district council. The research study will be done within the premises of the council and other related support functions or link operations to the council including local traditional leadership. It will confine itself to the management aspects of the organization and the staff. There are various key players in waste management all of whom have extremely important roles to play. It is for this reason that the researcher has keen interest in embarking on this research to provide more information to the existing pool of information.

Though various studies have been conducted concerning waste management, none have been conducted with the emphasis on the effectiveness of a solid waste management system and its impact on the social and economic statuses of the residents particularly in Chongwe.

Chongwe district is a district in the outskirts of Lusaka province. Most of its land is traditional under the reign of senior Chieftainess Mukamambo Nkhomeshya III of the soli people. This

means that most of the land under this district is unplanned and alienated by the traditional leaders.

Chongwe district was chosen as the area of study for two reasons, firstly; currently the public health section at the council has not yet established a system of waste management and disposal as such the information gathered in this thesis may prove to be helpful in setting up the system. Secondly, Chongwe district is a growing district and such it would be helpful to analyze and educate the residents on the social aspect of waste management and its economic benefits.

#### **1.10 LIMITATIONS**

Chongwe is an area that has no current waste management system in place; and as such the information available was scanty. Some of the respondents interviewed in this research were not willing to provide the information needed for the research as they felt the study was politically motivated and the information could be used against them.

#### **1.11 SUMMARY**

The chapter has outlined the research problem and why this problem has led to this research. It has further discussed the conceptual framework and has laid down the scheme of the research model and how it will be operationalized. The chapters that follow outline the literature review and the methodology employed in the study including details for the collection, measurement and analysis of data. The chapters that follow will further explore the research findings/analysis and give conclusion and recommendations.

## **CHAPTER II**

### **2.1 LITERATURE REVIEW**

#### **INTRODUCTION**

The chapter discusses the literature review and conceptual framework. It gives an overview of definitions and concepts related to waste management, discusses the role of the local authority and the community, and the effectiveness of a solid waste management system including its impact on the social and economic status of the residents of Chongwe.

The literature review commenced with a general consideration of conceptual approaches to solid waste management and progressed with a review of previous studies. The study encompassed a literature review of municipal waste management in other countries and closed with the examination of the current options of waste management practices for mainly, African municipalities through relatively recent publications.

Waste management has been a global concern as it has problems associated with hygiene, global warming, climate change and huge amounts of green gases which are being emitted into the atmosphere. According to Adam J.S (1999) the dilemma of waste management has many points to consider and these have been discussed at various fora at global level through the United Nations Framework Conventions on climate change where various activities aimed at reducing the impact of solid waste mismanagement which has resulted into negative effects of high levels of emitted gases.

At national level, the republic of Zambia, has outlined the challenges to do with solid waste management and has consequently outlined national policies particularly the vision 2030 which has outlined very specific targets on waste management and the medium term in the revised sixth national development plan which runs from 2011 to 2016. Some challenges include the fast growing population against static solid waste infrastructures and lack of appropriate technologies for waste collection which through national development plan strategies have been set to address these challenges.

According to the ministry of local government report of 2011, it is estimated that only 10% of urban areas in Zambia are serviced with solid waste collection. This poses a serious challenge to densely populated urban and peri urban towns in the country. Among the peri urban towns, Chongwe is one of the towns that are highly affected with inappropriate waste management systems.

Currently Chongwe with a population of 238,445 (CSO 2010) does not have an effective solid waste management system in place. It is estimated that only 1% of the solid waste is collected and dumped in designated sites. The rest is disposed of in pits (49%), indiscriminate dumping (47%), burning (3%) and other method (1%) (Chongwe district situation analysis report 2015). This has resulted into the indiscriminate disposal of waste, water and land pollution thereby causing diseases such as cholera and dysentery (living conditions in Zambia survey 2010). The District Health epidemic report (2016) indicates that the cases of cholera and other diarrheal diseases increase during rainy season and are directly linked to improper storage and disposal of solid waste.

Tremendous increases in population, uncoordinated growth of development and expansion of commercial activities have an impact on socio-economic and environmental set up of the district.

Solid waste management in developing countries has been a challenge. Some of the reasons for its mismanagement are; lack of laid down structure in waste management, lack of participation by the community and behavior aspects to mention but a few.

Whereas the challenges outlined above have been eminent, effective Solid Waste management provides a number of economic options for many citizens especially the low income community. Informal economic activity has been the focus of intense debate among scholars for nearly four decades. (Hart, 1973) subsequent studies conducted in several countries have shown that some workers are employed by informal businesses. Empirical studies have demonstrated the importance of the informal sector in the economies of developing countries (giz 2011)

According to Scheinberg et al., 2010, In a GIZ-funded study about the economic impacts of informal sector activities in six cities around the world (Cairo, Lima, Lusaka, Quezon City and Pune), it was shown that all informal valorization activities along the entire value chain are profitable and generate a total net profit of 130 million Euro, which is distributed between 73,000 informal workers.

Rahul Singh and Chari (2003) discuss that the informal sector can bring significant economic benefits to developing countries, from a macroeconomic perspective as they are well adapted

to the prevailing conditions, namely abundant supply of working force, but scarce capital. Haan et al (1998) opines that the informal sector is essential for the environment as well as the local economies in urban centers: first, by collecting waste materials the informal sector takes over a part of the burden of the municipalities; second, since the waste collection is labour intensive and involves no special skills or transaction costs, it provides a livelihood to many people in developing countries.

Well managed informal activities generate work and income for many people and can help to overcome poverty. The activities of recycling and retail of valuable materials draw concrete income opportunities for entire households and informally employed informal workers.

According to living conditions monitoring survey (2010), statistics show that Over 60 per cent of Zambia's population live in poverty. Despite sustained economic growth of more than five per cent per annum over the past decade, these high levels of poverty have persisted. Contributing towards the goal of reducing persistently high poverty rates and to break the intergenerational transmission of poverty, the Government of Zambia with support from UNICEF and other cooperating partners, has been intensifying its social protection response over the last few years.

The Researcher reviewed literature as it relates to the effectiveness of solid waste management system. The literature review commenced with a general consideration of conceptual approaches to solid waste management and progressed with a review of previous studies. It further covered causes and expected benefits of implementing a waste management system to the society in terms of the general service delivery and the potential social and economic



benefits. The literature also highlighted the problems that could arise with the involvement of the private sector in solid waste management. The study encompassed a literature review of municipal waste management in other countries and closed with the examination of the current options of waste management practices for mainly, African municipalities through relatively recent publications. Actors in Solid Waste Management Both public and private sectors are active in solid waste management. Typically, local governments are responsible for the collection and disposal of the waste generated within their jurisdiction..

A wide array of literature was reviewed from the local aspect to international fora. This was to provide a balanced view on the said topic.

The National Solid Waste Management Strategy for Zambia (2004) was reviewed to provide information on the government's stand/position on waste management in Zambia. This paper which is a vital document that proposes integrated approaches to addressing the problem of poor solid waste management, which has had over the years far reaching effects on both human health and also the environment, focuses solid waste management and is consistent with the Agenda 21 and the World Summit on Sustainable Development. It has a number of goals to achieve some of which include enhanced protection of the environment and control of pollution and rational utilization of natural resources so as not to disadvantage future generations.

The draft revised sixth national development plan for 2013-2016, provided resourceful information on the Zambia's critical waste management problem, which is threatening the health of the people of Zambia, socio-economic development as well as the environment.

Agwu (2012) in his study on the Issues and Challenges of Solid Waste Management Practices in Port Harcourt City, Nigeria- a behavioral perspective, examined the relationship between individual background (sex, age and social class) and the level of awareness, knowledge and practices of solid waste management in Port Harcourt city residents and also to ascertain the relationship between individual background (sex, age and social class) and the level of awareness, knowledge and practices of solid waste management in Port-Harcourt city residents.

Francisco Grajales and Roberto G. Aiello (2005) presented a paper on the “Social Aspects of Solid Waste Management: The experience in Argentina. This paper which was presented at the World Bank discussed how the use of waste management as an economic activity improved the social status of the communities. It also discussed Environmental and Social Sustainable Development with reference to Latin America and the Caribbean Region.

Scheinberg, Simpson, Gupt et al., 2010 in the GIZ-funded study about the economic impacts of informal sector activities analyzed the quantities of waste handled by informal and formal stakeholders, their inter-linkages and the specific costs of their operations. The study centered on highlighting the future of waste management in low- and middle-income countries and finding ways to understand and benchmark waste management systems in low- and middle-income countries.

A working paper on Municipal Solid Waste Management in Low-Income Countries” (Switzerland, 9-12 April, 1995) was written as a joint initiative of Swiss Development Cooperation (SDC) and the Urban Management Programme (UMP), aimed at defining critical issues of MSWM in developing countries, identifying support needs and outlining possible directions of development assistance.

### **2.3 PRIVATE AND INFORMAL SECTOR INVOLVEMENT IN SOLID WASTE MANAGEMENT**

Partnerships are a key element to working successfully – not only in the waste management industry but other sectors as well. Due to the absence of effective enforcement strategies coupled with the lack of innovative initiatives of handling waste, local authorities have a mammoth task in their hands. It is against this background that private and informal sector involvement in waste management through the franchise companies and community based waste management initiatives are being implemented in order to improve the urban and peri urban environment.

#### **Formal Private Sector**

Public sector agencies in SWM generally mean municipalities or city corporations. They operate under certain inherent limitations. According to Peter Schübeler et al (1996) Private enterprises can usually provide solid waste collection, transfer and disposal services more efficiently and at lower cost than the public sector. However, formal private sector involvement in solid waste management does not in itself guarantee efficiency. Chongwe district council in its proposed tender documents outlines the preconditions for successful private sector involvement which include:

- I. Competitive bidding,
- II. Existence of enterprises with adequate technical and organizational capacity,
- III. Effective regulation of the part solid waste management.

Private enterprises usually are having a return on their investment. In waste management this can be achieved through selling waste collection, transfer, treatment, recycling and/or disposal services. There are different forms of partnership with the public sector; they may provide capital, management and organizational capacity, labour and/or technical skills.

According to Kabungo and Tensik (2007) private enterprises can, under appropriate conditions, provide solid waste management services more effectively and at lower costs than the public sector because of their profit making orientation. However, private sector involvement does not, in itself, guarantee effectiveness and low costs. Problems arise when privatization is poorly conceived and regulated and, in particular, when competition between suppliers is lacking.

Lusaka city council is one such council that has successfully implemented roll out of waste management services to the private sector.

Though successful, an evaluation conducted by the waste management unit revealed that the performance of some of the contractors leaves much to be desired. Because of political interference, some underperforming contractors are still being allowed to continue operating. Despite this, the waste management contractors operate under contractual agreement with the local authorities. The councils retain responsibility for user fee collection which ensures more equitable service access.

Chongwe district has a number of unplanned settlements as most the land is traditional land. This has affected the contracting out of waste management services since private enterprises depend on the direct collection of user charges and they have little incentive to provide services in low-income areas where revenue potentials are weak and infrastructure development is poor such as roads.

The district will be divided into zones that will be managed by successful applicants who will not only provide a service at a fee but also use appropriate machinery. Currently only one company has successfully bid for the provision of the service in a selected zone. Due to its unplanned nature, Chongwe district will have to allow for informal sector participation in waste management.

### **Informal Sector**

The term informal sector is used to refer to the economic activities which have the following characteristics of non-permanence and casualness, outside the scope of the existing company law or government regulations, carried on in small-scale by less capitalized establishments mostly relying on household labour (Salahuddin & Shamim, 1992).

The According to Mutesu (2010) the informal sector participates in waste management to provide services for the district. They comprise of unregistered, unregulated activities carried out by individuals, families, groups or small enterprises. Even though the handling of waste is the responsibility of the Local Authorities as enshrined in the Local government Act, it is merely reasonable for local authorities to opt for Community Based enterprises (CBEs). The basic motivation of the informal sector is self-organized revenue generation; informal waste

workers are often driven to work as waste collectors or scavengers by poverty and the absence of more attractive employment possibilities.

Informal sector activities are not regulated or controlled by government agencies; they exist and operate because of market forces or other socioeconomic factors (Ali, 1999). The above definition very well describes the activities carried out by the multitude of people who depend on solid waste to earn or supplement their income. In low-income countries like Zambia, the size of the informal sector is significant because of poverty, unemployment or underemployment. There are also comparatively formal entities active in the sector. These are community-based organizations and small business enterprises

With the unemployment statistics derived from the research, it is inevitable that informal participation in waste management would provide employment solutions to the residents of Chongwe. The amount of recyclable and biodegradable waste is a determining factor in the type of disposal method that can be employed by the local enterprises.

The waste collection, transfer, separation, recycling and/or disposal activities of informal waste workers constitute economically valuable services.

According to GIZ report (2004) the informal sector represents a significant part of the economy, and waste recuperation and recycling is an important economic activity. Funding for waste management is always inadequate, and real costs are never fully recovered. As earlier indicated in the findings, Chongwe district council has no capacity to provide waste management services to the entire population of Chongwe. The unplanned nature of most of the residential areas under the study in Chongwe also makes it difficult for private companies to access these areas due to the impassable nature of the road infrastructure.

Although the key alternatives of waste management currently favored includes privatization, proposals are in many cases hurried, ill thought-out, and often based on developed country models which assume a totally different technical, financial and organizational framework, particularly with regards to primary collection. Since the privatization of all or parts of many municipal solid waste systems requires collaboration among players, its success is far from realization as the private contractors are often faced with survival challenges of contract termination clauses for lack of performance.

There are a number of reasons that bring out the need to in cooperate the informal sector as an alternative arrangement:

- Chongwe district is divided into village and council land. Council land is issued by the council while village land is issued by village headmen. This has led to most areas being unplanned. This means that accessibility which is one of the requirements for an effective waste system to be in place, is not there. Door to door collection is only possible if road network is planned.
- As the city of Lusaka is getting crowded, many residents are moving into the outskirts and Chongwe is one such place. A number of residential areas are being created. The council does not have the equipment to service the entire Chongwe. Currently it only has one tractor and so to cater for other geographical areas will be difficult.
- The council depends on grants from the government which are unpredictable and infrequent. And as such, the council is operating a dumpsite and not an engineered landfill. The capital requirements are high and access to it is limited.

- The dumpsite that the council is using needs to be upgraded to a sanitary landfill. According to Tchobanoglous et al (1993) a sanitary landfill is an engineered facility for the disposal of MSW designed to operate with the ability to minimize public health and environmental impacts. Through the creation of these CBEs, the council will be able to raise funds through contract and dumping fees.

The local authority ought to recognize that employment creation in Chongwe can be used as a strategy for poverty reduction. From the findings, it was clearly indicated that the age between 25-35 had the highest unemployment figures. This means that the council can use solid waste collection and disposal as a source of livelihood by involving public private partnerships (PPP). From the experience of Lusaka City council, Chongwe can structure the district and make solid waste management a community based and demand driven activity.

The National Solid Waste Management Strategy (2004) defines why it is necessary to ensure that Zambia develops and establishes a coordinated approach to sound solid waste management. A strategy which will lead to improvements in the management of waste encompassing all streams is therefore desired. The goal of any waste management strategy is to dramatically reduce the number of illegal disposal sites and build modern waste management facilities. With this need for new facilities, the local authority will create employment and economic opportunities. New businesses and employment opportunities in connection with collection, storage, and transportation of waste can be created. Other opportunities such as training, operational support, research and development can also be created.



Mulenga (2009) discusses how the effects of improper waste collection do not only impact on the economy but also have close impact on the environment and general health and well being of the communities. It is important that the local authority provides for social and economic benefits for the communities and waste management can provide an array of benefits some of them being:

- Employment creation through resource utilization such as recycling of waste
- Economic development through building of infrastructure
- Taxes and license fees generated through the collection of waste.

In developing countries like Zambia, the impact of waste mismanagement is not only felt by the residents themselves, but by the government as well. Tremendous increases in population, uncoordinated growth of development and expansion of commercial activities have impact on socio-economic and environment set up of the district. It is therefore important that stakeholders, be it development practitioners, municipalities, NGOs or companies, realize the potential contribution of integrating the informal sector to a cost-efficient solid waste management and a resource-efficient economy also contributing to poverty reduction.

Global partnerships and national including local actions should take into account the existing experiences and develop locally adapted approaches to include the informal stakeholders in order to improve solid waste management systems and resource efficiency and create economic opportunities.

### **2.3.2 COMMUNITY BASED ENTERPRISES AND WASTE MANAGEMENT**

In the interest of effective service delivery and cost efficiency, solid waste management authorities ought to establish partnership relationships with residential communities and user groups. Besides reducing costs, privatization of waste management services is also relevant to employment and income generation. According to Schübeler et al (1996) solid waste departments in local authorities often employ large numbers of relatively unproductive workers, and private enterprises are able to lower costs and increase efficiency precisely because they manage to do more with less to accomplish the same job with fewer workers. To extend service coverage, especially in low-income areas, the use of low-cost, community-managed primary collection systems should be considered.

According to Mubaiwa (2003) the absence of an effective enforcement strategy coupled with the lack of innovative initiatives of handling waste has left the local authorities with a mammoth task in their hands. It is against this background that implementing community based waste management initiatives would improve the urban environment with organizations of men and women. The initiatives were born from the realization that communities themselves can be drivers of change within.

In a similar study conducted in Chitungwiza, Zimbabwe, the community based approach in SWM proved to work as there was full Local Authority support and success was possible when the members of CBOs or SEs that were offering the service are from within the same community. The model not only addressed the environmental problems resulting from poor waste management but to a greater extent contributed to the establishment of good health and

hygienic standards which led to the reduction of diseases such as fever, dysentery, diarrhoea, cholera and malaria. The project results achieved so far indicate great potential for the improvement of the living environment through processes that are managed by communities

Community based SWM in mikocheni, Dar es salaam Tanzania is a success story. Gideon R. Mandara discusses that Strengthening and implementation of existing policies that emphasize communities as partners to build on CB-SWM experience & grow into CB-Contracting has helped Tanzania participate effectively in SWM.

Also from the experience of Lusaka city council which has demonstrated how effective community-based solid waste management can be, Chongwe district council is able to establish active partnerships with community organizations in the interest of more extensive, low-cost waste collection service. Effective community involvement in waste management primarily depends upon the functional link between community groups and private sector enterprises. Community-based micro-enterprises for solid waste management can be an effective form for such community-private sector linkage.

The mobilization of communities can be done through the council's works department and existing community leadership structures.

Based on the experiences learned from the different scenarios, the integrated waste management system can be best adopted if the community based waste management model is embraced by all stakeholders as a working model worth implementing.

A holistic approach is required which will not only look at waste when it becomes a problem but one that will address the policy and legislative environment, health and hygienic issues and the socioeconomic dimensions relating to waste. There is need for an effective participatory engagement of the key stakeholders who include: the Ministry of Environment, the Ministry of community development, Ministry of Local Government, Local Authorities, finance institutions, NGOs, private sector and the communities at large.

## **SUMMARY**

The chapter outlined the literature review. The chapters that follow outline the methodology employed in the study and the details for the collection, measurement and analysis of the data. The chapters further explore the research findings/analysis and give conclusion and recommendations.

## **CHAPTER III**

### **3.1 RESEARCH METHODOLOGY**

#### **INTRODUCTION**

This chapter discusses the research design, the population and sample considered, the sampling procedure and the data collection method. Further, the analysis of data and limitations of the study are outlined.

This research began with a review of national and local reports on solid waste management in order to understand the national and local state of the field. Data for this study were obtained from primary source. The data were obtained through direct interview technique and questionnaire administration; information was sought out on the socio-economic and personal characteristics of the respondents. The questionnaire also addressed the issue of the composition and methods of solid waste generation, storage and disposal. Relevant literature on solid waste generation and disposal were reviewed. Similarly, documents were obtained from various agencies concerning the waste management such as the district council, ministry of social welfare, ministry of Health, etc. Further information on the land use map of Chongwe, staff strength, equipment used for refuse storage and disposal if any, as well as location of dumpsite in the study area were also collected from the relevant authorities.

The wards and indeed the households and businesses in the study area constitute the sampling frame. The rationale behind this exercise was to generate baseline information on the management of solid waste at the local authority.

This chapter therefore focuses on how the research was conducted. It examines the methodology of the study and what relevant tools were used in order to arrive at unbiased and non-doctored findings. The research approach which was used to collect data for this study was comprehensive and purposive encompassing the study area. The study used the deductive to inductive approach, moving from a general perspective to the specific problem research at hand.

Both literature review and field work were extensively used in this survey to collect as much data as possible. As sample of respondents' representative of the council officers, councilors and community members were selected. A number of interviews were conducted with the local authority, various stakeholders and social groups. Based on the literature review and interviews conducted, questionnaires were designed and distributed.

The review of the literature provided an overview of factors affecting the effectiveness of waste management systems. Data was collected from databases that indicate the performance of the local authority. These were: public health reports, district epidemic reports, social reports and other sources of primary data. Information was also gathered from the peri urban areas within Chongwe district.

### **3.2 Research design/ plan**

A research design is a blueprint for fulfilling objectives and answering questions, (Cooper, D & Schindler, A.S, 2004) and it can also be said that it is a set of guidelines and instructions to be followed in coordinating the research ( Babbie & Morton, 2001).

In coming up with facts which can be proved even in the near future, the research was designed in such a way that it systematically collected data which was used for its analysis. The research design was formulated to enable it access detailed information surrounding the research topic which embraced the whole research process starting with research proposal writing and approval, research planning, data gathering, and interpretation. It also looked at a research design strategy, data collection design, sampling design, instrument development, and finally data collection, analysis and presentation. The non-experimental design was considered in the undertaken research as the researcher relied on surveys, observations and case studies. A research design is therefore simply an outline of how the research was conducted. A design is used to structure the research, to show how all of the major parts of the research project, the samples or groups, measures, treatments or programs and methods of assignment work together to try to address the central research questions. In other words, the research design is the overall plan for relating the conceptual research problem to relevant and practicable empirical research. The research design was used to stimulate the research process and to show how all the major parts of the research activities add up to a thorough investigative and analytical process.

### **3.3 Study population**

The population considered in this study is that of Chongwe. Chongwe has a population of about 238,455 with 22,000 households and 250 business premises. According to research, 10 % of the study population ought to be used as the sample unit, and this translated to 23 845. However, due to constraints in time and money, only 3 residential areas and 25 business premises were selected as sample units.

#### **Sample size**

The sample population was 1022 and sample size of 122. This was a convenient sample and not a calculated one.

### **3.4 Sampling techniques**

In this study for practical and cost reasons, it was not possible to collect information from the entire population of Chongwe. Only three residential areas and 25 business premises were selected as convenient samples.

### **3.5 Data collection instruments**

The research instruments that were used were research questionnaires, structured interviews and observations tours. Research questionnaires were used because of their structured nature; they were easy for the respondents to provide the primary data needed for the research. Open ended questions were used in order for the researcher to assess the effectiveness of the waste management system within the area under study. The researcher used questionnaires among



other instruments because, it was important that people's attitudes, experiences and behaviors are obtained. This research brings out the cause and effect relationship and so using a questionnaire was unavoidable (Gilbert 2001). The main limitation in the use of the questionnaire in Chongwe was literacy levels. A number of questionnaires were either not filled in or wrongly done due to literacy levels. But to counteract this, the researcher used structured interviews with relevant professionals and site visits.

Structured interviews were used as guides when interviewing professionals in the field of waste management and social partners. The structured interviews were conducted on site with professionals being interviewed and the researcher filling in the answers. This was ideal in that the questions being asked were only those that the researcher wanted answered to avoid unnecessary answers or ambiguity. The limitation encountered in the use of this instrument was the unavailability of the professionals and time constraint. It is for this reason that the researcher conducted observation tours to gather more information.

Observation tours were both guided and unguided tours. This means that in some cases the researcher was accompanied by professionals and in some cases individual tours were done. The observation tours yielded a lot of information as on site information was collected, for instance, the levels of uncollected waste, the state of drainage works and personal interviews with community members. The limitation in this kind of instrument was the reaction of residents at times was not favorable as they did not understand the essence of the research.

### **3.6 Data collection procedures**

Data was collected from scientific literature, existing data bases, structured interviews with relevant professionals, observations made during visits to peri urban areas and questionnaires applied to stakeholders including questions about the state of the waste management system in Chongwe (if any) and the challenges associated with them. Descriptive methods such as interview surveys, case studies and documentary analysis were used to draw conclusions.

### **3.7 Data presentation and analysis procedures**

In trying to come up with enough information on the assessment of effective solid waste management on the social and economic status of the residents of Chongwe the researcher categorized questionnaires as well as interview guides for households and other players. A total of 144 structured questionnaires were distributed within the Chongwe District which was used as a case study for the said study. The questionnaires had both open and closed questions regarding solid waste management. Most respondents exhibited willingness in responding to the laid down questions and completed the questionnaires within the stipulated time despite the usual problems associated with the process of research which are inevitable. According to Saunders et al (2000), such problems include hostility exhibited by respondents towards researchers, the costs of carrying out the study and the validity of data given by the respondents.

However, 122 responses were received fully filled in representing 100% return rate of the questionnaires given out. The responses were objective and provided considerable degree of validity. After this data was gathered, it was tabulated graphically on charts and graphs.

### **Ethical considerations**

Authority was sought from Chongwe district council to carry out the research in Chongwe and also from the University of Zambia. Informed consent was obtained from the respondents as they were briefed about the purpose of the study and were also assured of the confidentiality of their contributions.

### **3.8 Summary**

The chapter outlined the research methodology employed in the study including details for the collection, measurement and analysis of data. The chapter that follows explores the research findings/analysis and further gives a conclusion and recommendations.

## CHAPTER IV

### DATA PRESENTATION AND DISCUSSIONS

#### 4.1 INTRODUCTION

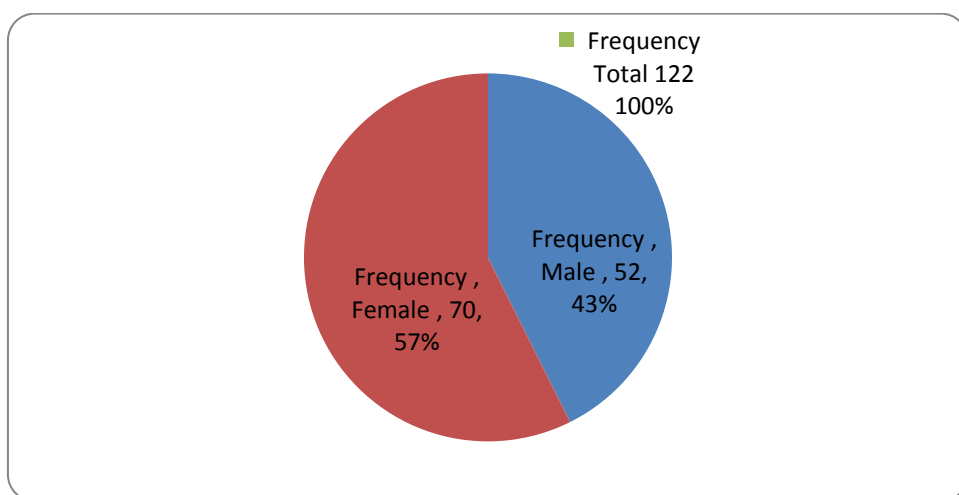
This chapter highlights the findings and analysis of the subject. It also compares the emerging issues from the research findings with the literature reviewed in order to review the theories by different researchers on the subject and the study results.

#### 4.2 Classification of responses

In this analysis, variables of solid waste generation, method of storage and disposal are used as dependent variables while the socio-economic characteristics such as age, family size, educational status, income, occupation, average monthly income and type of building are dependent variables.

**Table 1: Gender Balance of the respondents**

| Details      | Frequency  | Percentage  |
|--------------|------------|-------------|
| Male         | 52         | 43%         |
| Female       | 70         | 57%         |
| <b>Total</b> | <b>122</b> | <b>100%</b> |



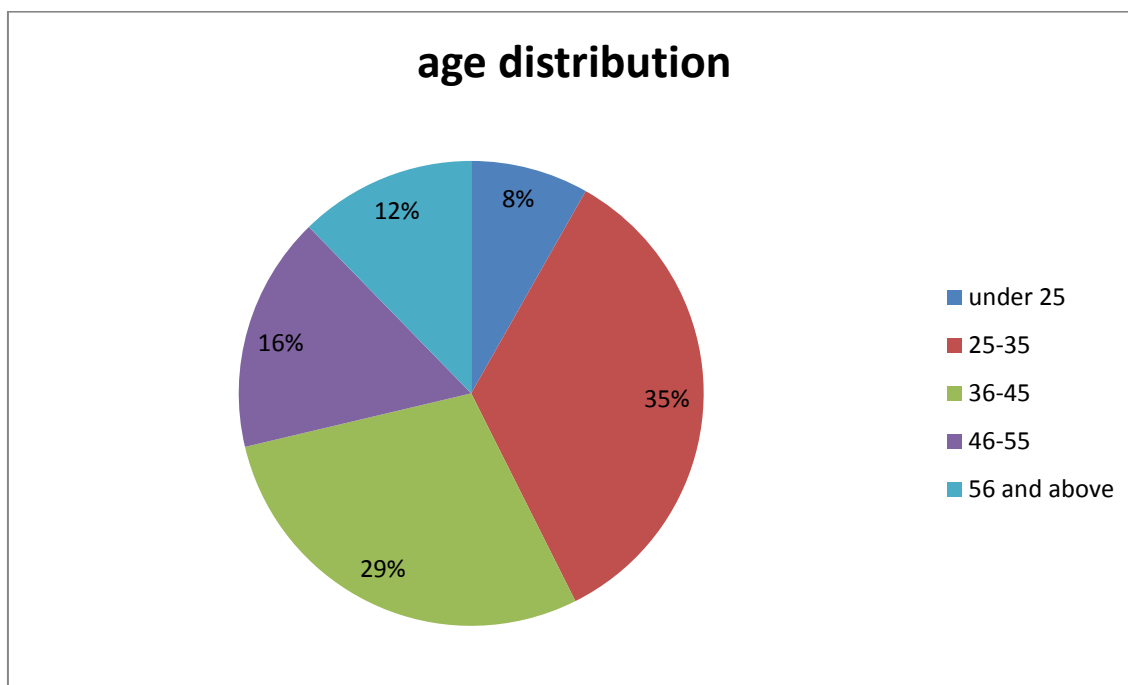
**Figure 3 gender balance of respondents**

*Source: field data 2017*

The analysis above shows a composition of 43% Male being part of the research and 57% female it could be seen from the table that there are more females at home during the interviews than males. Solid waste management requires participation from both sexes for it to be effective. This is because both of them contribute to its generation and so it should be the responsibility of all to manage and dispose of it responsibly.

**Table 2: Age Distribution of the Respondents**

| Age          | Frequency | Percentage |
|--------------|-----------|------------|
| under 25     | 10        | 8.2        |
| 25-35        | 42        | 34.4       |
| 36-45        | 35        | 28.7       |
| 46-55        | 20        | 16.4       |
| 56 and above | 15        | 12.3       |
| Total        | 122       | 100        |



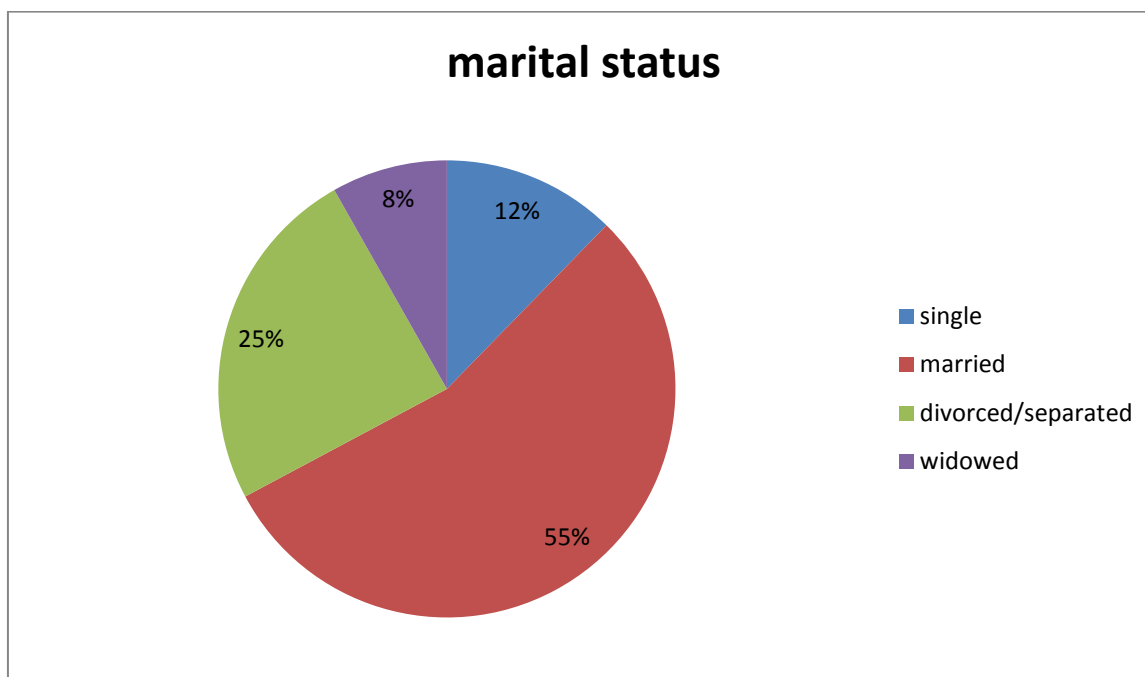
**Figure 4 age distribution**

*Source: field data 2017*

Table 2 shows the age distribution from the 122 respondents. It is very obvious that people between the ages of 26 - 35 years dominate the age structure of the households, followed by 36-45 years of age.

**Table 3: marital status of the respondents**

| Marital status      | Frequency | Percentage |
|---------------------|-----------|------------|
| Single              | 15        | 12.3       |
| Married             | 67        | 54.9       |
| Divorced /separated | 30        | 24.6       |
| Widowed             | 10        | 8.2        |
| Total               | 122       | 100        |



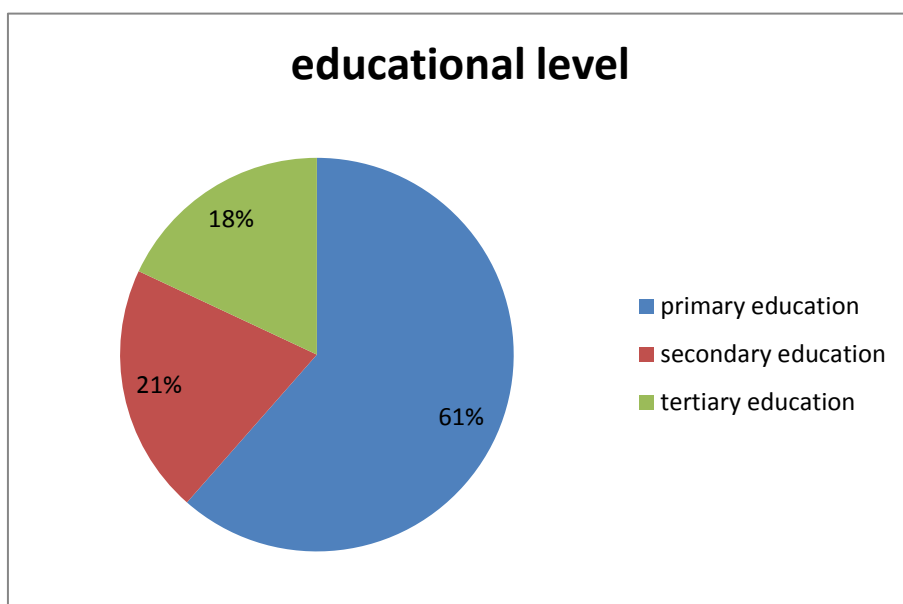
**Figure 5 marital status**

*Source: field data 2017*

Figure 3 shows the marital status of the respondents. With respect to marital status, about 54.9% of the respondents are married while only 12.3% are single.

**Table 4: educational levels of the respondents**

| Educational level   | Percentage | Frequency |
|---------------------|------------|-----------|
| Primary education   | 75         | 61.48     |
| Secondary education | 25         | 20.49     |
| Tertiary education  | 22         | 18.03     |
| Total               | 122        | 100       |



**Figure 6: educational levels**

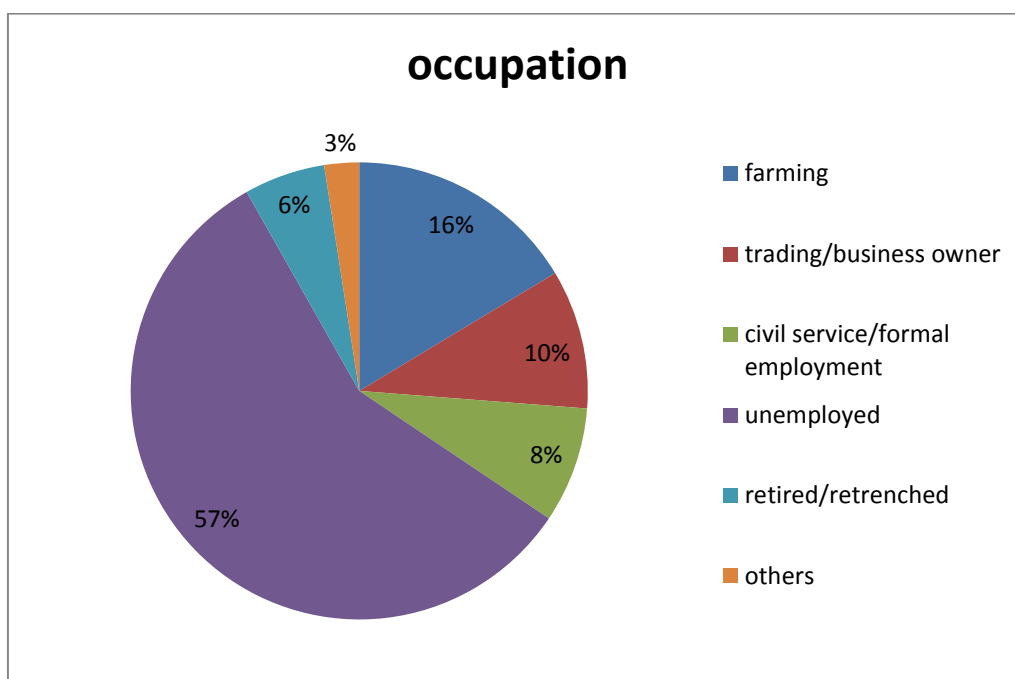
*Source: field data 2017*

The proportion of the respondents with primary education is very high followed by those that claimed to have secondary certificate.

**Table 5: sources of income for the respondents**

| Details                          | Frequency | Percentage |
|----------------------------------|-----------|------------|
| Farming                          | 20        | 16.39      |
| Trading / business owner         | 12        | 9.84       |
| Civil service/ formal employment | 10        | 8.19       |
| Unemployed                       | 70        | 57.38      |
| Retired/retrenched               | 7         | 5.74       |
| Others                           | 3         | 2.46       |
| Total                            | 122       | 100        |





**Figure 7 sources of income**

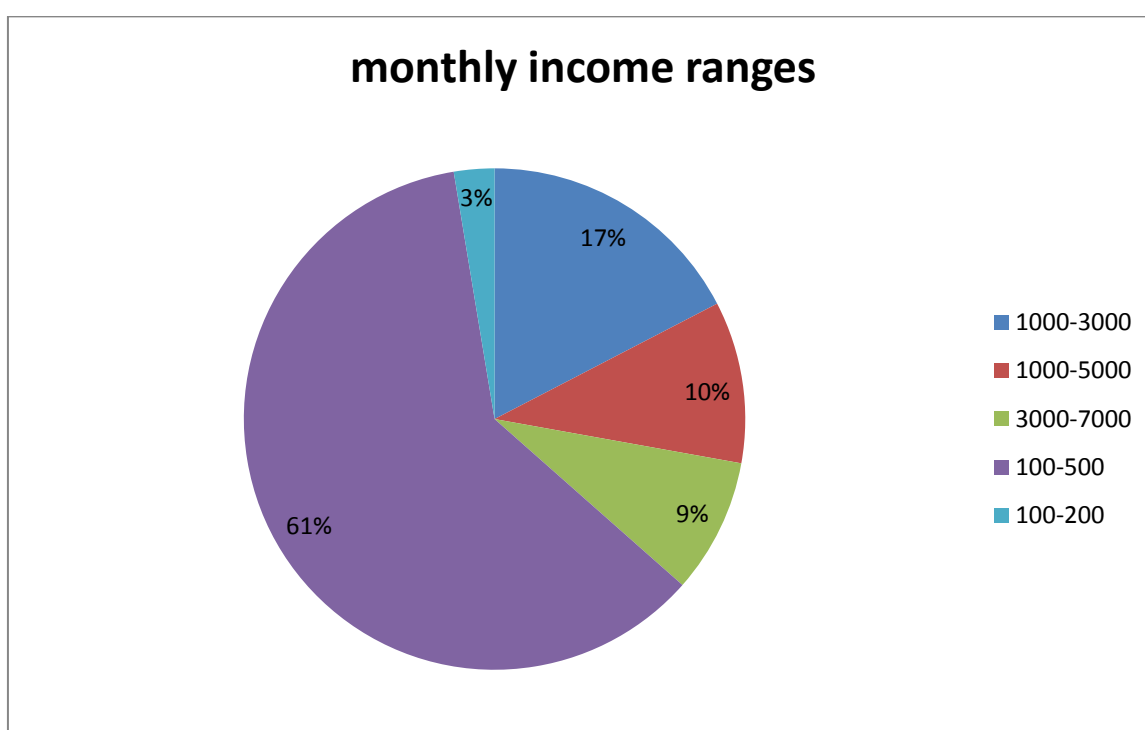
*Source field data 2017*

Out of the total number of respondents, 70% were unemployed, while 20% earned their income through farming. Based on the occupations of the respondents, most of the respondents were unemployed followed by farming.

**Table 6: monthly income of the respondents**

| Occupation                       | Range of income | Frequency | Percentage |
|----------------------------------|-----------------|-----------|------------|
| Farming                          | 1000 - 3000     | 20        | 16.39      |
| Trading / business owner         | 1000-5000       | 12        | 9.84       |
| Civil service/ formal employment | 3000-7000       | 10        | 8.19       |

|                    |         |    |       |
|--------------------|---------|----|-------|
| Unemployed         | 100-500 | 70 | 57.38 |
| Retired/retrenched | -       | 7  | 5.74  |
| Others             | 100-200 | 3  | 2.46  |



**Figure 8 monthly income**

source *field data 2017*

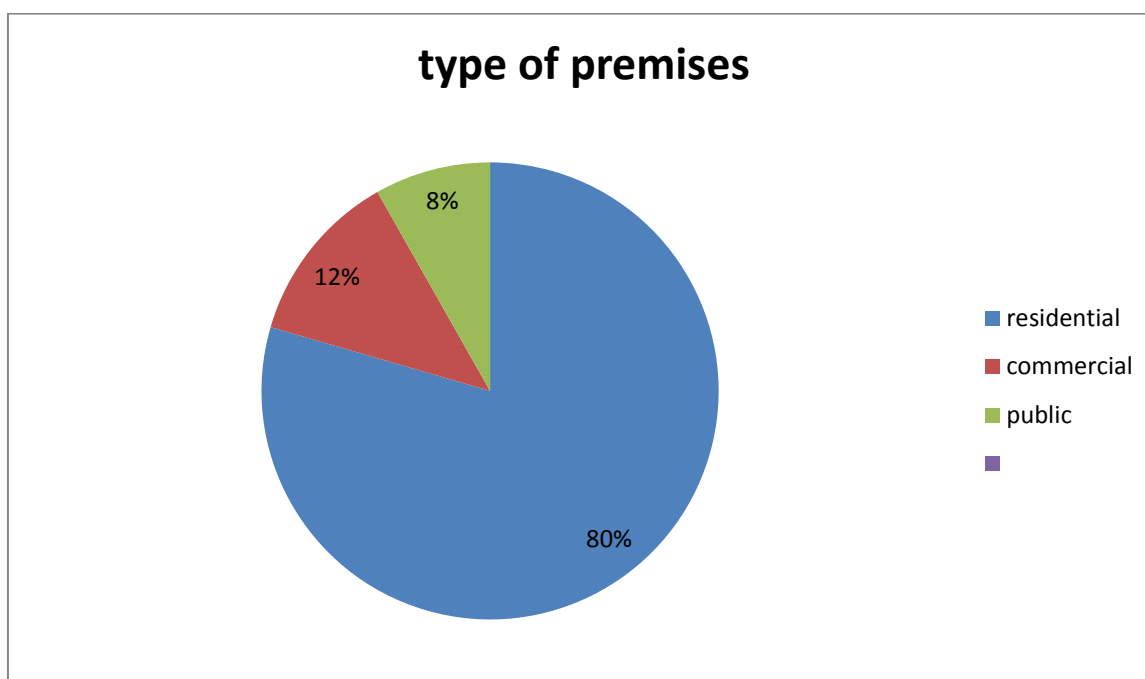
The table shows that the majority of the respondents earn below K100-K500. These people are unemployed and rely on odd jobs such as carrying goods on wheel barrows, drawing water for residents etc. The highest income earners are in the civil service while the retrenched/retired said they had no source of income but relied on their terminal benefits.

Chongwe district is a farming area but the respondents interviewed did not farm at commercial level but peasant. Also the business owners did not run big businesses but were small to medium enterprises (SMEs)

Information on the income of the respondents was very difficult to obtain due to the following reasons low level of education which brought up fears of being taxed, inability to keep the record of their sales and the majority are not fixed and their income is not regular.

**Table 7: type of premises**

| Type of premises               | Frequency | Percentage |
|--------------------------------|-----------|------------|
| Residential                    | 97        | 79.50      |
| Commercial (business, markets) | 15        | 12.30      |
| Public (hospital, church etc)  | 10        | 8.20       |
| Total                          | 122       | 100        |



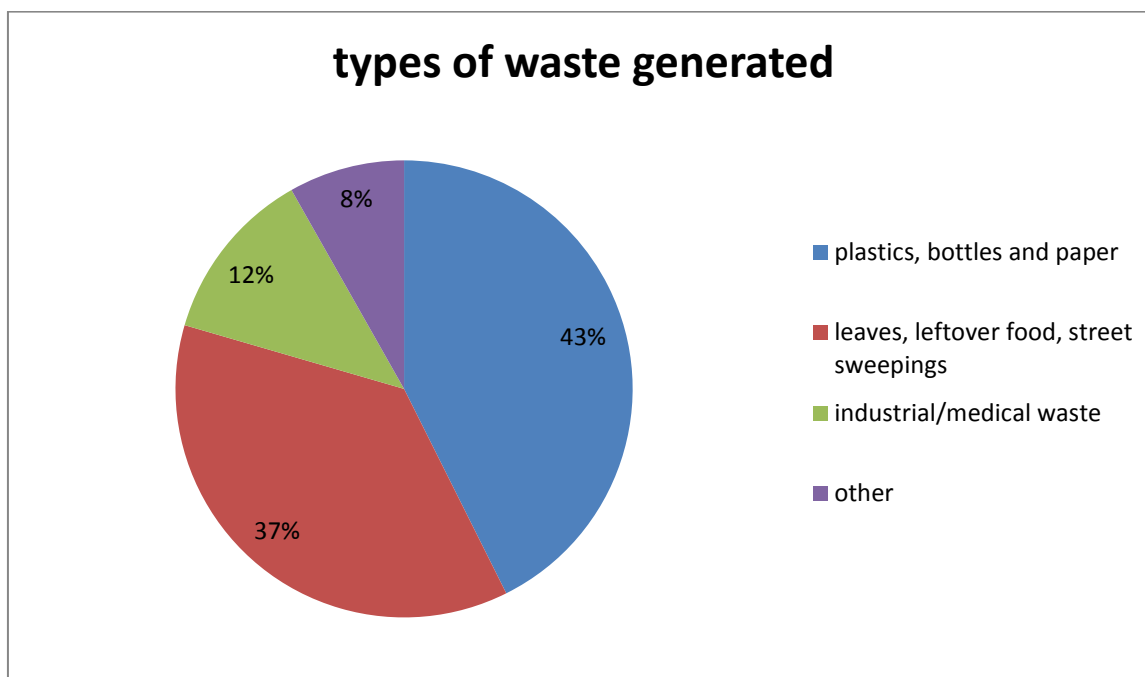
**Figure 9 Type of premises**

*source field data 2017*

The table shows the areas in the community where the respondents emanated. 80% were from residential areas because a total of 3 residential areas were sampled. Only 25 business premises were sampled. These included a market, a police station, a hospital, a school and two churches.

**Table 8: types of waste generated**

| Type of waste                               | Frequency | Percentage |
|---------------------------------------------|-----------|------------|
| Plastics, bottles and paper                 | 52        | 42.62      |
| Leaves, leftover food, street sweepings etc | 45        | 36.88      |
| Industrial/ medical waste                   | 15        | 12.30      |
| other                                       | 10        | 8.20       |
| Total                                       | 122       | 100        |



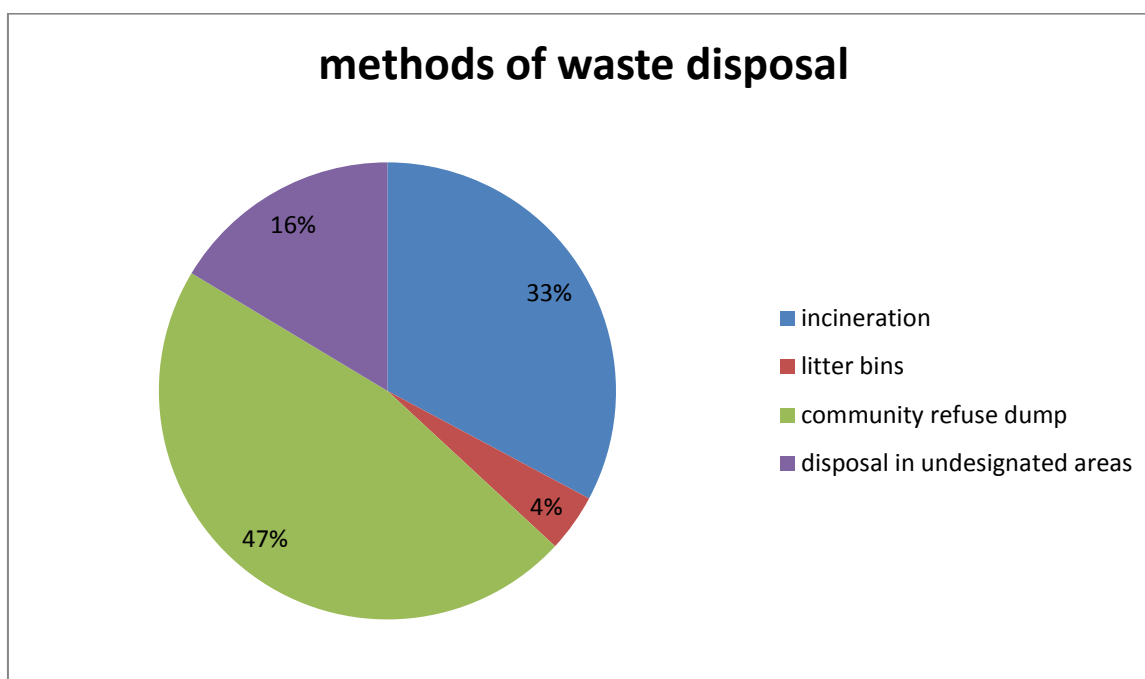
**Figure 10 types of waste generated**

Source *field data 2017*

The table shows the various wastes observed in the study area. It could be seen from the table that plastics bottles and paper constitute the major waste generated in the study. 43% and 37% are high volumes of waste that can be recycled. While medical and other wastes are at 12% and 8% respectively.

**Table 9: methods of waste disposal**

| Method of disposal             | Frequency | Percentage |
|--------------------------------|-----------|------------|
| Incineration                   | 40        | 32.80      |
| Litter bin                     | 5         | 4.09       |
| Community refuse dump          | 57        | 46.72      |
| Disposal in undesignated areas | 20        | 16.39      |
| Total                          | 122       | 100        |



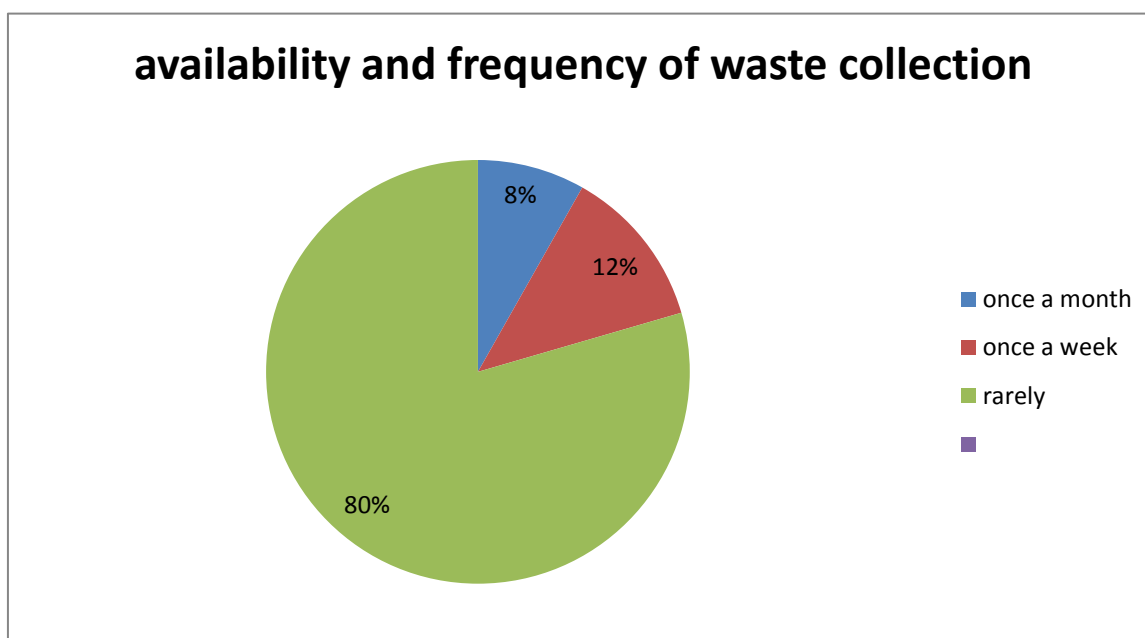
**Figure 11 method of waste disposal**

**Source** *field data 2017*

The table shows the various methods by which the respondents finally disposed of their solid waste. Some of the respondents are incinerating, while some of the respondents claimed the use of drains and gutters, and community refuse dump site.

**Table 10: availability of waste collection service**

| Details      | Frequency  | Percentage |
|--------------|------------|------------|
| Residential  | 97         | 79.50      |
| Commercial   | 15         | 12.30      |
| Other        | 10         | 8.20       |
| <b>Total</b> | <b>122</b> | <b>100</b> |



**Figure 12** availability and frequency of waste collection Source *field data 2017*

Figure 10 shows Availability of waste collection service in the areas of study

The table shows that 80% of the respondents said they are rarely serviced while 12% were serviced once a week and the remaining 8% were serviced once a month.

**Table 11: refuse fees paid for waste collection**

| Details                       | Fee | Duration  | Percentage of compliance |
|-------------------------------|-----|-----------|--------------------------|
| Residential premises          | K25 | Quarterly | 62                       |
| Commercial and other premises | K25 | Quarterly | 38                       |

**Table 12: number of premises**

| Details              | Total | How many are serviced | Percentage |
|----------------------|-------|-----------------------|------------|
| Residential          | 97    | 60                    | 62         |
| Commercial and other | 25    | 9                     | 38         |

### **4.3 SOCIAL FACTORS**

An assessment of the social factors that affect solid waste generation and disposal is of great importance in order to safeguard the environment from various problems that could emanate from improper solid waste management. Stuart brooks et al (1995) discusses that in order for a waste management system to be effective, the residents need to understand and accept it. Therefore, understanding the attitude and behavior of the residents towards waste management will provide insight on what programs and activities to introduce in a community.

#### **4.3.1 ATTITUDE AND BEHAVIOUR TOWARDS WASTE MANAGEMENT**

It is Important to understand the attitudes and behavioral patterns of individuals in a community. According to Afangideh, Asuquo et al (2012) "attitude" is defined as a predisposition to a specific kind of behavior. Kelly (1971) discusses that attitude is a kind of "mental set" representing a predisposition to form a certain opinions. According to him, the definition signifies that individuals have an array of opinions to situations. Given that the local authorities have traditionally been the main service providers for municipal waste



management, most of the respondents interviewed had the perception that waste disposal is not to be paid for and that its final disposal is merely not their responsibility. This has been the main reason for the incessant growth of waste volumes in our towns in Zambia and is as a result of the ignorance of some dwellers towards the effect of indiscriminate dumping of refuse and the care free attitude of most of the dwellers, who know what, should be done but they are careless by saying that everybody wants their refuse to be taken away, nobody wants to take part in its disposal and management. Chongwe district which only has one tractor to service the entire district has suffered a lot of problems from attitudes and behavior. From the respondents interviewed, bad practice towards waste management was noted. This is as shown in the cross tabulations comparing attitude and practices of the respondents.

**Table 13: attitude and knowledge**

| Details      | Attitude and knowledge Levels | Percentage |
|--------------|-------------------------------|------------|
| Sex          |                               |            |
| Male         | 36                            | 29.5       |
| Female       | 63                            | 51.6       |
| Social class |                               |            |
| Lower        | 50                            | 40.98      |
| upper        | 72                            | 50         |
| Age group    |                               |            |
| Under 25     | 5                             | 4.09       |
| 25-35        | 47                            | 38.5       |
| 36-45        | 25                            | 20.49      |
| 46-55        | 20                            | 16.39      |
| 56 and above | 25                            | 20.49      |

Table 13 shows the attitudes and behavior deduced from the questionnaires given to the 122 respondents. The analysis shows that the female residents had a high score as they have positive solid waste management practices than their male counterparts. This can be understood from the fact that in most households in developing countries, females do most of the cleaning and sweeping activities.

On the social class, most of the respondents that were considered to be upper class had knowledge and better attitudes/awareness on waste management practices though no significant difference was noted.

The age group showed significant results as the age group between 25-35 showed high knowledge levels. This could be attributed to that fact that that age group is considered learned and are in employment.

#### **4.4 SOCIAL AND ECONOMIC FACTORS**

The success of waste management programs will depend to a greater extent on awareness programs and public education. General awareness on the dangers of improper disposal of waste provide for sensitization of communities on the existing environmental laws and by-laws and the existing illnesses or diseases thereof.

From the research findings it revealed that social factors such as sex, age, and marital status have no empirical relationship with waste generation in the study area. This means that educational status, monthly income and types of premises are significant factors in influencing the type and quantity of waste generation in Chongwe. From the data collected, it is deduced

that as people acquire more education, get better jobs and have a rise in income level the pattern of consumption changes thereby generating different types of waste that reflect their altered way of life.

Interestingly it was also revealed that there's a relationship between the Socio-economic factors and solid waste storage in the study area. Age, sex, and family size did not determine the choice of storage equipment in their home. But other factors such as educational status, occupation, monthly income and types of premises had an impact on the type of storage receptacle by the respondents. The more the people get educated and aware of the impact of unmanaged solid waste the more they appreciate effective waste management thereby choosing the best receptacle/container that will prevent breeding of disease carrying organisms. The employment status also has a determining effect on the choice of waste receptacle.

The research also showed that age and family size have a determining factor on the choice of method of solid waste disposal. This means that when for instance marital status changes, and begin to have children, the family size increases and they generate more waste which finally needs disposal.

From the 122 respondents it was evident that the sex and age did not relate with the generation of waste. But the level of education and income status definitely had an impact on waste generation, storage and disposal.

Levels of education, occupation and monthly income affected the waste generation, storage and disposal. This means that educational status, occupation monthly income including the areas where the respondents live are significant factors influencing the type and quantity of

waste generated. As people acquire more education, have better sources of income, the pattern of consumption changes thereby generating different types of waste that reflect their new way of life. Also, different type of land-use generates waste that reflects their activities. For instance, it was observed from the study area that residential generates more of biodegradable and putricible matter. Age, sex, and family size are not determining factors in what type of waste receptacle used for storing of refuse in their home. But other factors such as educational status, occupation, monthly income and types of areas determined the receptacle used for storage of refuse.

The study also revealed that the more the respondent got educated and aware of the side effect of mismanaged solid waste, the more they desired to have an effective waste management to prevent disease carrying organisms breeding in their premises.

Age and family size determined the choice of method of solid waste disposal. This implies then as people get married, bear children and increase in family size, they generate more waste which in most cases they cannot properly managed by themselves, therefore seek more efficient means for deposing of it.

#### **4.5 DATA FROM CHONGWE DISTRICT COUNCIL**

An interview with a representative of the works department highlighted the need to institute a proper waste management system which should be mandatory for all people living within Chongwe. Currently the council only has one tractor that services the entire district. This has led to inadequacies and infrequent collection times. Even though the district has been divided

into 20 zones, the collection by the only tractor that at times maybe down due to repairs is not adequate.

The council does not have a system in place that will adequately provide waste management services in Chongwe. A waste management unit has not been formed and as such waste management services are being conducted by the works department which has a lot of activities of which management is not priority.

The district of Chongwe was divided into 20 areas of density but only 3 residential areas and 25 business premises were selected as a convenient sample. The demarcation into these areas was done with the aid of Land-use map of Chongwe district council as indicated in figure 16.

The Map aided in dividing the district into these zones, of which 3 residential areas and 25 business premises were selected. This again was a convenient sample and not a calculated one

## **DISCUSSION OF FINDINGS**

The discussions under this section cover the findings on the assessment of an effective of solid waste management system on the social and economic status of the residents of Chongwe.

An interview with a representative of the works department highlighted the need to institute a proper waste management system which should be mandatory for all people living within Chongwe.

The assessment indicated that the gender representation was fair in terms of the responses from the respondents with 43% men and 57 % females. In every community strategy, it is important both men and women are equally represented in order to implement community based waste management initiatives to improve the urban environment. Solid waste collection and disposal require participation from all generators. During the research, it was seen fit that views from both male and female respondents be collected and analyzed in order to be an unbiased view.

A gender-sensitive project approach and a clear commitment to gender equity and the empowerment of women and men are critical in the support of new initiatives in urban services and environmental protection. According to Maria Muller et al (2004) in order to increase project effectiveness, equitable access to livelihoods and resources or benefits which the project makes available, attention to gender must be made.

Moser (1993) discusses that incorporating gender perspectives in development efforts is necessary for the successful implementation of development programs. Men and women play

different roles in society and their gender differences are shaped by ideological, historical, religious, ethnic, economic and cultural determinants.

The ultimate objective of incorporating a gender perspective in development programs is to promote the equality of women and men in society and to empower women and men in their own development.

Stuarts brooks et al (1995), opines that for a waste management system to be effective, members of the community needs to understand it and accept it. The levels of education of the respondents in this research indicate that mostly people have basic primary education. This is shown by the percentage of 67%.

The level of education of an individual helps in understanding programs and activities that are introduced in a community. This is supported by findings which show that the majority of interviewees has enough knowledge on what solid waste was and how to deal with it.

The basic primary education that most of the respondents had meant they could understand the waste management system and its principles.

The highest number of people in the unemployment bracket indicates the unavailability of employment opportunities. Unemployed respondents were at 57.38% followed by farming at 16.38%. These findings indicate the availability of manpower within Chongwe.

From the findings, 42.62% of waste collected was plastics, bottles and paper followed by 36.88 biodegradable waste. The quality of waste produced indicates the probability of waste recycling and composting.

32.80% of waste collected was disposed of by incineration and 46.72% was dumped in the community. This brought up the question of who collected these high amounts of waste being dumped in the community. The fact that waste is being generated, its collection and storage including eventual disposal is of paramount importance. This waste is usually accumulating in open spaces, blocking drainages and causing floods. The picture below illustrates this:

The respondents interviewed indicated they were not being adequately serviced. With 79.50% of the respondents indicating that they rarely received the collection service, it shows the amount of waste accumulating on a daily basis due to lack of consistent collection with the local authority.

A discussion with the a representative from Chongwe district council admitted this flaw and indicated that it was due to the incapability of the council to provide the service. This also highlighted the need for community based enterprises in the community to improve service delivery and also to provide employment opportunities for the local youth.

Most of the residents indicated they are rarely serviced while others once a week. Even though these residents pay their monthly subscription, the service being provided was not at par with the payment. According to Kabungo and Tensik (2007) the polluter pays principle outlines the need for the waste generator to pay for the service provided. The fees being paid by the residents according to the research, were affordable for most residents including the unemployed group.

During an interview with the council representative, the council will consider involving the community in waste management because the participation of the community in the program



will determine the success or failure of the waste management system. It was also revealed that once the council becomes a municipality the council will begin to re-plan the municipal to allow for road network to be constructed within the area. Door to door campaigns will be conducted to educate the residents on the need to contribute to collection or payment of waste collection. The council is willing to provide technical support to the CBEs in any way they can. The council is in the process of creating a public health department that will spear head the waste management system. This will be important as this department through the health inspector will provide expertise in this field.

Local government authorities are entrusted with the responsibility for the provision of solid waste collection and disposal services. They become the legal owner of waste once it is collected or put out for collection. Responsibility for waste management is usually specified in bylaws and regulations as earlier discussed and these may be derived, more generally, from policy goals regarding environmental health and protection. Besides their legal obligations, local governments are normally motivated by political interests.

As waste management climbs the political and environmental agenda, bright sparks in the industry respond with innovation. It is the responsibility of the local government through the respective councils to establish technical agencies that will authorize contracting of private enterprises and informal businesses (community based enterprises) to provide waste management services.

In this case, local authorities remain responsible for regulating and controlling the activities and performance of these enterprises. These are some of the ideas that have changed the industry over the past few years, and given the potential answers to global problems.

## **5.1 Social aspects of Solid Waste Management**

Social aspects of SWM include the patterns of waste generation and handling of households and other users, including community-based waste management. People's attitudes usually determine Waste generation patterns including their socio-economic characteristics. Attitudes are usually positively influenced by awareness-building campaigns and educational measures.

The national solid waste management strategy (2004) opines that without public education and general awareness on the dangers of improper disposal of waste there is too often insufficient public demand for action. Public awareness plays a vital role in changing people's attitude and ensuring the success of waste management programs. The success of waste management programs will depend to a greater extent on awareness programs. The awareness programs will provide for sensitization of communities on the existing environmental laws and by-laws

The absence of an effective enforcement strategy coupled with the lack of innovative initiatives of handling waste has left the local authorities with a mammoth task in their hands. In many low-income residential areas, community-based solid waste management is the only feasible solution. Functional links between community-based activities and the municipal system are very important. It is against this background that the need to implement community based waste management initiatives to improve the urban environment with organizations of men and women is important. These initiatives ought to be born from the realization that communities themselves can be drivers of change within. This is because once the community itself is involved in the management of its own issues; the community will ensure sustainability of its own interventions

To augment the waste management services, it is important that Participatory tools be offered to the communities to enable them use tools which cover various issues on diseases, water and sanitation issues and general hygiene aspects. These trainings will enable communities to not only benefit from proper waste management services but also from good behavioral change resulting into good health and hygiene practices.

Unfortunately the impression that waste is a ‘dirty’ job has been imprinted in the minds of many people to the extent that mobilization of the community to be involved in the waste related initiative is a difficult task to ensure that people participate. But based on the lessons learned so far the integrated waste management system being implemented by Lusaka City council, the community based waste management model can be embraced by Chongwe district council as a working model worth implementing.

## **5.2 Economic aspects of SWM**

Generally, the economic aspect of waste management introduces flexibility, efficiency and cost effectiveness into solid waste management measures. Furthermore, it can stimulate development of pollution control technology and expertise in the private sector; provide government with a source of revenue to support waste management program and provide available income to communities through community based enterprises.

### **5.3 SUMMARY**

This chapter discussed the findings emerging from the research and compared the research findings with literature review with a view of bringing out the relationships between the various theories posited by different researchers on the subject and study results. The chapter that follows will provide a conclusion and later recommendations.

## **CHAPTER VI**

### **SUMMARY, CONCLUSION AND RECOMMENDATIONS**

#### **6.1 SUMMARY**

The chapter first looked at the objectives of the research and assessed if the objectives were met. Secondly, it also assessed if the issue of research questions was also addressed. The main conclusions were derived from the main findings and then the recommendations.

This research was aimed at assessing the effectiveness of a solid waste management system and its impact on the social and economic status of the residents of Chongwe.

#### **6.2 Achievement of research objectives**

- **To study the characteristics of solid waste management practices in Chongwe**

In order to achieve this objective, an analysis of types of wastes generated, methods of disposal including the attitudes and behavior towards waste management was carried out as depicted in the tables 1 up to 4.

- **To establish an understanding of the perception among local communities about SWM for sound economic and social development**

In order to achieve this objective, an analysis of the attitudes and behavior deduced from the questionnaires given was conducted and depicted in tables 9 to 15. From the tables the scores indicated the perception among local communities about SWM.

- **To investigate the social and economic impacts of SWM system in Chongwe**

Tables 5 to 7 were derived from the answers in the questionnaires with the view of achieving the above set objective. The levels of education, occupation and monthly income indeed affected the waste generation, storage and disposal. This meant that educational status; occupation monthly incomes including the areas where the respondents live are significant factors in influencing the effectiveness of a SWM system

- **To assess how improved SWM practices can contribute socially and economically to the development in Chongwe district.**

From the interview with a representative of the works department, the researcher was able deduce the inadequacies and infrequent collection times that are currently being faced by the council concerning SWM and achieve the set objective. From the analysis in the study, it can be inferred that in the interest of effective service delivery and cost efficiency, improved SWM practices that include community-managed primary collection systems especially in low-income areas is a significant contribution to development in Chongwe.

### **6.3 Answering the research objective**

The main research question was to assess the effectiveness of a solid waste management system on social and economic status of the residents of Chongwe. The research question was fully answered through the various discussions and analysis carried out in this research. The factors identified in this study play an important role in determining the effectiveness of a SWM system and its impact on the residents.

#### **6.4 Main findings**

The informal sector represents a significant part of the economy, and waste recuperation and recycling is an important economic activity. Funding for waste management is always inadequate, and real costs are never fully recovered. From the findings, it can be inferred that the inability by the council to provide the required service to the residents of Chongwe has contributed to the piles of waste accumulating in the community. This also has been exasperated by the attitude and behavior of the residents. Tremendous increases in population, uncoordinated growth of development and expansion of commercial activities have impact on socio-economic and environment set up of the district. Though this study was specific towards solid waste generation, storage and disposal, waste generally should be properly treated or managed. The study has shown that the socio-economic characteristics explain almost all the variations in the solid waste generation, storage and disposal in Chongwe. It is said, health is wealth, it can therefore be concluded that the management of the environment is a pre-requisite for good and sound health.

#### **6.5 CONCLUSION**

The findings of this research have great implications for the improvement of the current solid waste management practices in Chongwe particularly with the intention of enhancing the need for behavioral and attitudinal change in achieving solid waste reduction, reuse and recycling for sustainable environmental management.

The researcher concludes that involving formal and informal sectors in the management of waste will improve service delivery. A lot of challenges have been faced by policy makers, service providers and end users. Some of the challenges faced by service providers include

financial, high staff turnover and frequent breaking down of machinery due to impassable areas. It is also clear that privatization of solid waste management will not only alleviate the challenges the councils are facing but socially and economically empower the residents thereby resolving sanitation issues for the enhancement of healthy nation. However, for solid waste management in the district of Chongwe to be effective, the residents, the local authority and the government through its various wings, have to work together and achieve the various sustainable development goals.

## **6.6 RECOMMENDATIONS**

In view of the findings and conclusion, the main recommendations are as follows:

- Waste management in developing countries must emphasize and be linked to creation of jobs, poverty alleviation and community participation. The GRZ, through its local councils must facilitate this inter linkage. The importance of social and economic empowerment should not be understated. Social and Economic empowerment is hence a prerequisite for actual equality
- National policies should promote efficiency in use of resources, emphasizing waste prevention and productive use of wastes
- There is increasing evidence that community based approaches to waste management can promote a more sustainable development. Grass root efforts are more successful than top down programs with little or no community participation. Community participation in SWM is the key to a sustainable and integrated waste management system. The aim is to get as many local community members as possible to participate and actively contribute to the system.



- The constitution of adequate legal structures and the process of informal sector integration should do. The adaptation of laws, regulations and bylaws by the government at national and municipal levels will facilitate compliance and adherence.
- Encourage both women and men to participate in businesses involved in water resource management and sanitation schemes. The councils should emphasize the creation of a feeling of ownership for the system among the citizens, whose waste is managed and whose local environment is improved is paramount. Strengthening informal sector integration can be done by raising awareness of political decision-makers for the work and the possible contributions of the informal sector for an appropriate waste management system, as well as for the important aspects to consider when integrating them.
- Government should provide adequate funds for proper execution of environmental program. This would help secure new modern waste management technology that could help correct the negative attitude of citizens towards waste disposal and management

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## APPENDICES

### Appendices 1 Questionnaire for Households and Businesses

#### Instructions

- a. You are asked to answer all questions freely in the way you understand
  - b. Do not write your name on the questionnaire
  - c. Tick against the correct answer or write as asked
- 

#### PERSONAL INFORMATION

1. Name of area:.....
2. House no/plot no:.....
3. Date of interview:.....
4. Status of interviewee:

- |                    |                          |
|--------------------|--------------------------|
| a) Owner           | <input type="checkbox"/> |
| b) Rented premises | <input type="checkbox"/> |
| c) Dependant       | <input type="checkbox"/> |
| d) Other (specify) | <input type="checkbox"/> |

5. Age :

|              |                          |        |                          |       |                          |       |                          |       |                          |
|--------------|--------------------------|--------|--------------------------|-------|--------------------------|-------|--------------------------|-------|--------------------------|
| Below 19     | <input type="checkbox"/> | 20-24  | <input type="checkbox"/> | 25-29 | <input type="checkbox"/> | 30-34 | <input type="checkbox"/> | 35-40 | <input type="checkbox"/> |
| 40 and above | <input type="checkbox"/> |        |                          |       |                          |       |                          |       |                          |
| Sex: Male    | <input type="checkbox"/> | Female |                          |       |                          |       |                          |       |                          |

6. When did you come into this area? Month.....  
year.....

7. Level of education

- a) Primary ☐
- b) Secondary school ☐
- c) Tertiary ☐
- d) Never been to school ☐
- e) Others specify .....

8. Number of people within the premises/household ☐

9. Sources of income

- a) Business ☐
- b) Work ☐
- c) Farming ☐
- d) Others specify.....

10. Monthly income.....

## QUESTIONS ON KNOWLEDGE

11. What is solid waste?

- a) Something considered useless by user ☐
- b) Something useful ☐
- c) Don't know ☐
- d) Others specify.....

12. What is your best way of disposal of solid waste

☐

- a) Burning
- b) Rubbish pit
- c) Road side dumping
- d) Drainage
- e) dump in nearby bush
- f) Others specify .....

13. Have you ever heard of the council waste management unit

- a) Yes
- b) No
- c) If yes, what do you think is the function of the waste management unit?  
.....  
.....  
.....

14. Do you subscribe with a waste collection at the council?

- a) Yes
- b) No
- c) If no, why don't you use the waste management unit to dispose of your solid waste?
  - Expensive
  - Irregular collection
  - Contractor does not pass through my home to collect solid waste
  - Comfortable with the current method of waste disposal

- Others specify.....

15. Do you pay any amount of money to have your solid waste collected by the waste management unit?

a) Yes

☐

b) No

☐

c) If yes how much? .....

16. How affordable is the amount that you pay to have your solid waste collected?

a) Affordable

☐

b) Relatively affordable

☐

c) Not affordable

☐

17. How do you store your waste prior to collection?

a) Bins

☐

b) Road side dump

☐

c) Plastic bags/sacks

☐

18. Others specify.....

19. How often is your waste collected?

a) Every day

☐

b) once a week

☐

c) Twice a week

☐

d) Once a month

☐

e) Rarely

☐



If rarely explain.....

.....

.....

.....

.....

20. How effective is the waste management system used to dispose off your solid waste? a)

Relatively effective

b) Not effective

21. Do you think the involvement of the community in waste collection is a good idea?

a) Yes

b) No

b) I don't know

22. Do you think privatization of the solid waste disposal would improve the levels of unemployment in Chongwe?

a) Yes

b) No

c) Others specify.....

23. Do you think the community based enterprises would manage solid waste and have the capacity the work effectively?

a) Yes

b) No

24. What suggestions would you have for the waste management system to operate effectively?

.....

.....

.....

25. General remarks

.....

.....

.....

***Thank you for your co-operation***

## **APPENDIX II**

### **Appendices 2 Data Collection Guide for Chongwe District Council**

What current system is in place for waste management? What is the extent of your operations?

What problems do you think waste management in Chongwe faces in executing the duties of solid waste disposal?

In view of the fact that Chongwe district council is not managing waste effectively, how is the council assisting in providing a solution to the waste management problem in Chongwe?

What is the council's view on private sector participation in waste management?

What options for final waste disposal is the council offering to the residents of Chongwe?

Is the council willing to engage with partners in resource utilization and waste minimization?

Is there any report on it?

How does the council intend to engage the community in waste management?

What facilities and work plan are in place?

Does the proposed solid waste management system have management buy in? Do you think there is enough political will in solid waste management?

What factors will be in place to ensure sustainability and effective performance of the system?

Are there any other suggestions?

### **APPENDIX III**

#### **Appendices 3 data collection guide for any community based enterprises involved in Solid waste Management**

How many community based enterprises are currently involved in waste management?

For how long have you been involved in solid waste management?

How many employees do you have?

Of the number of employees that you have, indicate how many are on permanent and temporal employment?

What is the highest qualification of you employees?

How is your relationship with the locals where you conduct your business?

Do you have necessary capacity to cover the area you have indicated above?

Are your clients able to honor their financial obligations as they fall due?

What are the conditions of your contract with Chongwe district council?

Are you happy with these conditions?

What obstacles do you face as you conduct you business?

What do you think can be done to improve on your service delivery?

## **Appendices 4**

THE TOWN CLERK

CHONGWE DISTRICT COUNCIL

P.O BOX 1

CHONGWE

CHONGWE REST HOUSE

TREASURY DEPARTMENT

P.O BOX 1

CHONGWE

Dear Sir,

**RE: REQUEST FOR PERMISSION TO UNDERTAKE A RESEARCH PROJECT IN YOUR DISTRICT**

The above subject matter refers.

I write to request for your permission to undertake a research in your district from 10<sup>th</sup> January to 24<sup>th</sup> January 2017.

My task is to evaluate the current waste management system employed in Chongwe. This is part of my MBA study programme.

This study is purely for academic purposes therefore, the results and recommendations will be communicated to you and other stakeholders. The recommendations are expected to benefit you as a district through extrapolation of the findings.

Yours faithfully,

Mailesi Ndhlovu

MBA STUDENT

UNZA/ZOU

## **Appendices 5**

### **HUMAN RESOURCE**

- **Researcher**
- **Data collector**

### **WORK PLAN**

- The first two weeks was used for finalizing the research topic, designing a questionnaire and testing it to a small group of respondents
- The following two weeks was utilized for formulating a research budget. All the costs to be encountered in moving from one place to another were considered. Costs for stationary and other logistics such as binding of the documents were looked into.
- After the budget was finalized, the following two weeks were used for distributing the questionnaires.
- As data was being collected through questionnaires, interviews were been conducted using interview guides on appointments.
- After collecting all the data the analysis followed. The analysis was done both manually and by use of Microsoft excel (spreadsheet).
- Presentation of the findings was done by both qualitatively and quantitatively which meant that tables and charts were used.
- The final 3 days were used for compiling a draft, editing and then a final copy produced, spiral bound and submitted.

## BUDGET

| NO                    | ITEM           | UNIT COST<br>(ZMW)        | TOTAL COST   | SPONSORS |
|-----------------------|----------------|---------------------------|--------------|----------|
| <b>STATIONERY</b>     |                |                           |              |          |
| 1.                    | Reams of paper | 25                        | 250          |          |
| 2.                    | Pens           | 30                        | 30           |          |
| 3.                    | Folders        | 5                         | 30           |          |
|                       |                |                           |              |          |
|                       | SUBTOTAL       |                           | 310          |          |
| <b>TRANSPORTATION</b> |                |                           |              |          |
| 4.                    | Field vehicle  | Personal vehicle was used |              |          |
|                       | Fuel           | 13                        | 1300         |          |
|                       | SUBTOTAL       |                           | 1300         |          |
| <b>HUMAN RESOURCE</b> |                |                           |              |          |
| 5.                    | Researcher     | 200                       | 2800         |          |
|                       | Data collector | 100                       | 1400         |          |
|                       | SUBTOTAL       |                           | 4200         |          |
|                       | TOTAL          |                           | <b>5,810</b> |          |

