

AN EVALUATION ON THE IMPACT OF REDUCING  
CENTRAL GOVERNMENT GRANTS ON SOLID  
WASTE MANAGEMENT: A CASE STUDY OF KABWE  
MUNICIPAL COUNCIL

BY

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for the award of the Degree of Master of Public  
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## Declaration

I hereby declare that the work presented in this discussion is for the award of the degree of **Master of Public Administration** (MPA) represents my own work and not previously submitted for a degree, diploma or any other qualification at this or any other University.

Signed .....

## Approval

This dissertation of **Mando Mumbi Pasi** is approved as the fulfilling part of the requirements for the award of the degree of Master of Public Administration by the University of Zambia.

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## **Abstract**

This study was aimed at ensuring Kabwe Municipal Council had a clean environment. As part of contributing to solving the problem, this study analysed the possible measures to tackle the problem of solid waste management. The overall purpose of this study was to evaluate the impact of the reduction of government grants to Kabwe Municipal Council (KMC) on its capacity to provide solid waste management services. The study was descriptive and both qualitative and quantitative research approaches were used. The sample size of the study was 150 respondents drawn from the Council, Local residents and the manufacturing companies within Kabwe. Both probability and non-probability sampling methods were used to select the respondents. Primary data was collected using both questionnaires and interview guides.

Functional and effective Local Governments are pillars of a democratic Government and tasked with the responsibility of taking and bringing social services and development projects to people. As local authorities closer to the people, Local Governments are expected to provide a number of services to the citizenry such as clean and treated water reticulation, refuse collection, tarred and gravel roads as well as routine drainages maintenance, civic estates, street lighting and other engineering activities...(including transport, carnal building, fire services and planning) housing, markets, bus terminals, kiosks, site and services and social services and solid waste management; Nchito, S. (2006: p 53).

The following key findings were established to be among the factors affecting effective solid waste management in the Municipality.

- Non establishment of dumping sites and non-provision of disposal bins.
- Air pollution and outbreaks of communicable diseases as a result of accumulation of solid waste and
- Inadequate resources for KMC to effectively collect waste generated.

In the light of the above findings of, the research recommended the following;

- Change in the current Local Government finance policy to suit the existing environment.
- Government to ensure that Councils enter into partnership with private organisations in waste management.
- Council to initiate formations of Community Based Organisations to manage solid waste and
- Introduction of waste management tax

## **Dedication**

To my husband, Col Madula PASI snr for his immeasurable and financial support rendered to me. To mum and dad I owe all that I am to them.

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Firstly, my sincere gratitude goes to Dr. Mafuleka, my supervisor, for his precious and valuable guidance, resourcefulness and constructive criticism and many other forms of assistance he rendered to me, to make my paper a success.

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God bless

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## **Acronyms**

BSAC	British South Africa Company
CBOs	Community Based Organizations
CCWL	City and Country Waste Limited
DCC	District Coordinating Committee
ECZ	Environmental Council of Zambia
EPR	Extended Producer Responsibility
HIV	Human Immune Virus
IMF	International Monetary Fund
KDHM	Kabwe District Health Management Board
KIFCO	Kabwe Industrial Fabrics Company
KMC	Kabwe Municipal Council
LGA	Local Government Act
MLGH	Ministry of Local Government and Housing
MMD	Movement for Multi-Party Democracy
NGOs	Non – Governmental Organizations
NORAD	Norwegian Agency for Development Agency
RDCs	Residential Development Committees
RRWU	Rhodesia Railway Workers' Union
UNIP	United Nations Independence Party
WHO	World Health Organization
ZWMA	Zambia Waste Management Association

## CHAPTER ONE

### INTRODUCTION

#### Introduction

This chapter focuses on the structure of the study and its objective as indicated in background to the study, statement of the problem, research questions, study objectives, methodology, significance of the study as well as the limitations to carry out a study on '*The evaluation on the impact of the reduction of central government grants of on Solid Waste Management, one of the core functions of Kabwe Municipal Council*'.

#### Background

Local authorities may be described as administrative units of local government or the form of governance at the lowest tier of administration within a given state. The term local government is used to describe a system of decentralised government in which many of the tasks of the central government are distributed among units separated both legally, geographically and organisationally from the central government source. Local authorities in Zambia are experiencing difficulties in the delivery of services to the residents. This is because of lack of devolution of functions from the central Government to the Municipality level; Hampway, (2005: p80) states that this failure is generally attributed to capacity constraints in terms of financial and human resources, institutional and administrative weaknesses, and he further points out that one of the public services that has been almost neglected over the years is Solid Waste Management.

The background to the study is rooted on the fact that cities and towns all over the world are experiencing a very high rate of urbanization, explained by the continued urban drift and natural increase of population; Tarver (1996: p98). The consequence is increased solid which unfortunately lack equal an effective methods of solid waste management measures. Previously, the problems of solid waste management were dealt with at the low political level Tarver (1996: p 99). Thus, each man took care of his own, usually with a dump at the back of his yard or a rubbish pit in his yard. However, subsequent years have seen the increases in the quantity and diversity of waste and with increasing urbanisation and industrialisation the problem and responsibility appeared to have shifted to the municipal governments or councils. The towns later accommodated high population, most of which lived in unplanned settlements and

consequently placed a strain on governments, both local and central governments to deliver basic services, particularly to the poor, hence rapid deterioration of Municipal Services was seen Hampwaye, G. (2005: p82).

According to Zerbock (2010) solid waste disposal and management is both an urban and rural problem in Zambia. Every person is a potential generator of waste and thus a contributor to this problem. To generate waste is one thing, the type of waste generated is another and yet also the way the generated waste is managed or disposed of is a different issue. It has more often than not turned out that the rate at which solid waste is generated is far higher than the capacity to responsibly manage this waste. Waste is generated by, and from different sectors; domestic, commercial, industrial and others and in many instances; the waste management responsibility has been left to the government or local authorities.

The Zambian Environment Management Agency (ZEMA) Annual Report (2009) postulates that there is growing consensus that the immediate stakeholders in the issue of solid waste (the generators of waste), in this case the residents need to join hands with the authorities in dealing with this problem that has far-reaching environmental, social and human health effects. Zambia is one of the countries in the world that rank low in urbanization but this notwithstanding, the urban population is growing. Actually, the urban population is growing faster at (3.7%) than the national average growth rate of (3.4%). The implication of this growth is that pollution issues such as solid waste management and the provision of adequate safe water alongside acceptable levels of sanitation coverage will need closer attention.

Shafiul and Mansoor (2011) contend that as Zambia's urban areas increase in number and expand in geographical and population size, solid waste is swiftly emerging as a significant issue in environmental management. Although there are established guidelines for solid waste management, there is need for clear legislation and preferably a national policy specifically on solid waste management. Particularly, waste volumes have increased in urban area due to the growing urban population, concentration of industries, consumption of residents, and inadequate finance and facilities to manage waste collection and disposal. This state of affairs has led to the volume of solid waste generated to go beyond what the available facilities can accommodate.

Chigunta (2008) observes that one of the major factors that have contributed to poor waste collection and management in Zambia is limited community participation in solid waste

management. The limited participation has budded from co-ordination and collaboration problems that exist among the three stakeholders in solid waste management i.e. the communities, the public (government) and the private sectors (ZEMA 2007).

Solid Waste Management for purposes of this dissertation can be described as the purposeful, systematic control of the Storage collection, transportation, processing and disposal of solid waste. According to Wilson. G, Solid Waste Management can further be said to be activities related to planning on how to remove useless, unwanted or discarded material from the surrounding of human habitat (1977: p738).

Historically, Zambia became independent in 1964 and her independence brought about a number of changes. One such change was the removal of the restrictions on the movement of people; Kabungo K (2003: p 3). As a result, many people from the rural areas or country side drifted to towns in search of employment. In due course, the population in towns grew so much that it became a major concern for Zambia's urban 'environment. The unplanned settlements sprung up in the 1960s after Zambia's independence, the new government released the restrictions on movement laws hence the migration of rural dwellers to urban areas in search of employment and perceived better working conditions. The towns had inadequate formal housing to cater for the migrants and thus resulted in the mushrooming of illegal settlers. (Article 24 of the 1974 constitution of Zambia). Because of the rapid increase in population growth and industrialization, there was a rapid increase in the quantity of waste generated due to these two factors. This high population density and growth rates is coupled with expansion and formulation of new unplanned settlements. Thus industrialization can be regarded as a double edged-sword, pushing our economy and at the same time causing adverse environment problems by producing wastes which is being failed to be managed, it is this urban growth and industrialisation that has resulted in increased amounts of waste in both city and municipal councils; LCC and ECZ(2001: p54). This made it extremely difficult for city and municipal councils to provide public services. As for Kabwe municipal council three things made the situation worse, there was the lack of dumping sites, equipment and trained manpower to manage the solid waste. This resulted in increased amounts of waste which has become an eyesore and a hazard to the environment and to human health; KMC annual report (1999: p13). As a result, the annual average rate of waste in Lusaka alone is increasing and is expected to grow from 220 000 tones to 530 000 tones in 2011, an increase of 14% while Kabwe alone generates a total of 156 000 tonnes of waste per year, ECZ, (2001: p104). This has almost made it impossible for the

municipal authorities to fulfill their obligations concerning solid waste management due to limited financial capacity and lack of trained adequate manpower. As a result of the aforesaid constraints, only a fraction of this solid waste is collected and disposed of in designated sites; ECZ (2001: p105).

### **Statement of the Problem**

In the current state, waste generated from all sectors of municipal council's economical activities is not effectively managed. There is indiscriminate dumping, irregular collection of waste resulting in heaping of waste and overflows coupled with inadequate resources, which situation has resulted into out breaks of communicable diseases such as cholera, dysentery and typhoid. These have been setbacks and challenges in the local authorities' provision of waste management services.

### **Purpose of the study**

The main focus of the study is the absence of empirical research evidence particularly on Kabwe Municipal Council in Central Province of Zambia, as no one has undertaken the study before.

### **Rationale of Research**

As already been alluded to in the background, until now, there has been no empirical data to show the impact of the reduced funding on the capacity of KMC to effectively provide solid waste management services. As a result, a huge empirical gap on this subject existed. This gap, therefore, constitutes the research problem for this investigation. Accordingly, the main research question pursued was:

*"How has the reduction in funding by the central Government to KMC negatively affected the capacity of the council to effectively provide solid waste management services?"*

### **Significance of the study**

1. This study is significant because the findings will provide information on the impact of reducing grants on the capacity of KMC to effectively manage solid waste.
2. In addition, the findings of the study can be used by relevant authorities to formulate policy measures to address the problem of solid waste management.
3. To promote the need for proper management of solid waste and for a clean and healthy environment.
4. The study is intended as a contribution to the discussion of solid waste management in Zambia

### **Broad Objective**

In line with the statement of the problem, the main objective of the study is to evaluate the impact of reduction of funding on the capacity of KMC to provide waste management services.

### **Specific Objective**

Specifically, the purpose of the study was

1. To assess the types of solid waste generated in kabwe municipality.
2. To identify where the majority of residents disposed of their solid waste.
3. To explore whether or not solid waste negatively affected the environment in Kabwe.
4. To establish whether or not solid waste contributed to the high cases of water and airborne diseases reported in Kabwe.

### **Research questions**

1. What type of solid waste are generated in kabwe municipality?
2. Where do the majority of residents dispose of their solid waste?
3. Has solid waste contributed to the high cases of water and airborne diseases reported in Kabwe.
4. How has solid waste affected the environment?

### **Theoretical Framework**

The theory used in this dissertation is based on Neo-Liberalism. This refers to a political economic philosophy that de-emphasizes government's interventions in the domestic economy and encourages autonomy, individual initiative and the development of one's ability to sustain oneself. It espouses economic liberalization as a means of promoting economic development and security of political liberty. Broadly speaking, Neo-liberalization seeks to transfer control of the economy from the public to private sector; Rosch, M. (2005: p170).

Authors such as Elizabeth Martinez and Anarld Garcia have argued that, around the world neo-liberalism has been imposed by powerful financial institutions like the International Monetary Fund (IMF), the World Bank and International American Development Bank. It is raging all over Africa and that the first main clear point of neo-liberalization includes:

- The Rule of the market; liberating "free" enterprise or private enterprise from any bonds imposed by the government and encouraging greater openness to International and Trade Investment;

- Cutting Public expenditure for social services like education and health care. Reducing the safety net for the poor and even maintenance of roads, bridges, water supply, again in the name of reducing government's role;
- Deregulation; reduce government regulation of everything that could diminish profits, including protecting the environment and safety on the job; and
- Privatization; sell state owned enterprises, goods and services to private investors. This includes banks, key industries, railroads, hospitals, schools, even fresh water. Although usually it is done in the name of greater efficiency, which is often needed. Elizabeth Martinez and Anarld Garcia: (1996).

On the contrary, other scholars such as Roger L. Kemp have argued that if anything, privatization has had mainly the effect of concentrating wealth even more in a few hands and making the public pay even more for its needs.

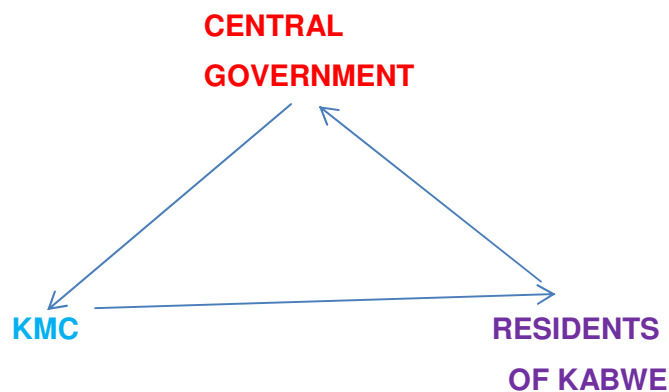
On the other hand, neo-liberal policies ultimately have changed the world's economies in many ways. However, some analysts such as Garry, T postulate that the extent to which the world has liberalized often maybe overstated. Some of the past thirty years' changes are clear and unambiguous like, cutbacks in public sector employment, elimination of the trade barriers etc. While some changes are not so apparent, they are debated in the literature up till now, such as, the reduction in the size of government. Most of the cuts to government spending appear to have been a temporary phenomenon that took place during the 1990s, contends Garry T (2000: paper p81).

The amount of solid waste generated in an area usually rises with increase in population. The increase in population amidst economic and social development that comes with the demand for a higher and affluent standard of living creates the need for more production as there will be more demand for consumption (UNEP, 2013). By human nature, people have different and in some instances distinct ways of doing things. It is no wonder that people will dispose of waste in different ways including indiscriminate dumping. Such environmentally unconscious ways of disposal contribute to the growth of the solid waste problem in the world and particularly in developing countries such as Zambia.

The view held by Cointreau-Levine and Coad (2010) that government has the responsibility to provide services to the citizens, including solid waste management, may be argued and may

bring out questions. There may be questions like, to what extent does this responsibility go, and what is the implication of the extent of the magnitude of responsibility held by the government, on effectiveness of the service provision? Besides, the government may not be in position to shoulder the whole responsibility on its own.

Loloji (2010) postulates that in Zambia, it has been noted that the responsibility for provision of solid waste management services is in the hands of the local governments as per the Public Health Act 1964 and the Local Governments Act 1997. The local governments have continued to struggle with this responsibility and in many instances failed to meet it adequately. There is need to appreciate that it is the citizens, the individuals and the public that generate the waste, in the homes and commercial areas. Yes, the citizens pay taxes to the government and local governments on the understanding that these in turn will provide the necessary services including solid waste management to the public. In the ideal situation, there would be no problem with that, but as the then Zambian Minister for Land and Environment Hon. Wybur Simusa in 2013 noted, depending on the good will of the people, to protect the environment may not always work. Besides, this good-will needs to be cultivated, nurtured and harvested through other means which is not laissez faire. A closer link between government and local governments on one side and the citizens and public on the other hand is highly recommended- need for collaboration between the local authorities and the public. Whether in the meaning given by Oakley and Marsden (2012) where people participate by being informed, after the basic decisions have been taken by the local authorities; or in the meaning given by Black, et al (2010), linking collaboration to trust and knowledge among the different parties, collaboration (between the authorities and the public) is an important ingredient in the implementation of any development activity/program.



Participation through collaboration presents an opportunity to both the local authorities and the public to create a synergy for successfully dealing with such problems as solid waste management. However, like Evans, (2009) notes, the authorities will not always be trusted when it draws closer to the social organizations. There may be suspicion that the admission of the state will lead to the demise of the community especially in terms of their values and freedom. Therefore, it is the responsibility of the authorities to put up strategies to have the public unsuspectingly get involved in solid waste management and also appreciate that a collaborative relationship between them and the citizenry would make life better but not worse. For this to thrive, however, willingness and acceptance on the side of the public should precede.

People may have different options which may work for them, but turn out to be detrimental to the way the authorities carry out their responsibilities. Participation is capable of bringing the contradictions together so that they can be understood and lessons drawn from them. It could start with just face-value collaboration and it turns out to be complementarity, into embeddedness, Evans (2009) and could end up into a co productive structure; Ostrom (2008). What matters is at what level the collaboration has reached and the direction it is taking and it is usually the public that determine this.

Good public participation programs are inclusive; they avoid a monologue and emphasize dialogue between Local Authorities and the Central Government which becomes instrumental in contributing to success.

In conclusion, neo-liberalization is an economic theory that emphasizes deregulation and reduction of state participation in the national economy. Political Regime has a small influence in this matter. As long as the state satisfies the desires of economists in implementing certain reforms, some of these reforms aim at a free market which regulates itself, in order to create a society of justice, in the sense of neo-liberalism. This justifies even very high social costs which are un-avoidable in such reforms and changes; Rosch, M. (2005: p193). Among the points which have been brought out, in my view, it was the cutting of public expenditure for social services such as, the central government of Zambia's reduction of funding to Kabwe Municipal Council.

### **Methodology**

The purpose of the study is to investigate of the impact of reduced funding on solid waste management of Kabwe Municipal Council in Central Zambia. The methodology used in the study

includes research design, questionnaire, interview, and triangulation, target population, sampling procedures, data collection and data analysis.

### **Study Design**

The study design was a case study, focusing on Kabwe Municipal Council, one of the municipalities in Zambia. The case study was preferred to other study designs because of the following; firstly, a case study investigates contemporary phenomena. In this study, the subject for investigation was the impact of the reduced central government grants towards solid waste management services to Kabwe Municipal Council. The council was picked out of all the Municipal Councils, because of the researcher's insights as a participant observer, having been a member of staff of the very Local Authority for several years. This allowed the study to be conducted at a cost and time that are relatively lower than would have been, if other study designs were used; Hogvold in Madimusa, C. (2006: p17). Secondly, a case study relies on multiple sources of data and in this case both secondary and primary sources were used.

### **Sampling Designs**

In this study, both purposive and stratified sampling methods guided the researcher. Descombe (1998) indicates that with purposive sampling, the sample is handpicked for the research and is based on the institution the researcher already know about the specific people and events. Cohen and Manion (1992) further review that in this type of sample, the researcher deliberately select its respondents because they are seen as likely to produce variable data. One advantage of purposive sampling is that it allows the researcher to concentrate on these people and events which is a good reason for believing that it would generate variable data for the research.

Borg and Gall (1989) strongly support this view of purposive sampling methods and contend that it can benefit the research because some of the selected respondents have knowledge and perceptions that are not available to other members which can add richness for the research; Silverman, (1997). This selection in a way allows the key respondents to reconstruct the past, interpret the present, and predict and the future which may prove to be of great value; Denzin and Lincoln (1998).

Stratified random sampling is a modification of random sampling in which you divide the population in two or more relevant and significant strata based on one or a number of attributes; Saunders, Lewis & Thornhill, (2007). The population of Kabwe is divided into strata thus policy

makers, staff, producers, consumers, and residents. The advantage of selecting the population into strata is that the sample is more likely to be represented proportionally.

The stratified Random Sampling method was chosen from randomly selected townships within Kabwe, namely; Luangwa, High-ridge, Poleni and Bwacha. Purposive sampling covered randomly selected officials from the Ministry of Local Government and Housing. The council management, non-management staff and some councilors were equally interviewed using structured questionnaires. The stratified sampling method was chosen because of the fact that the council is stratified according to levels. It has councilors, who are the policy makers, management staff, who are the implementers, such as Town clerk, Directors and then non-management staff who carry out the actual tasks or day to day duties. The principle behind stratified Random Sampling was to divide a population into different groups called strata, such that each element of the population belonged to one stratum only. Then within each stratum, random sampling was performed using either simple or systematic/internal sampling method. The council management, non-management staff and some councilors were interviewed using structured questionnaires. For this study, the simple sampling method was used to select samples from the Municipality (townships) and Council work place.

### **Sample Design**

The target population of this study was One thousand five hundred (1,500) people affected by the management of policy and funding of waste solid management. Because the researcher could not manage to go around to all people involved, three (3) research centres were selected; namely the council, policy formulating body, namely the council which comprises councilors , (elected members), the non-management staff and the management staff. Three (3) policy implementing sectors and five (5) receiving sectors, municipal residents, in High-ridge and Bwacha areas, manufacturers, markets, wholesalers and retailers of residents. All these are based in Kabwe.

### **Sample Size**

The sample size of this study is One hundred and fifty (150) respondents. All the respondents are affected by policy and funding of solid waste management. One hundred and fifty (150) is one tenth representation of total target population of people affected in the policy and funding of solid waste management based in Kabwe. A sample of respondents was drawn as follows;

Kabwe Municipal Council Staff	:	Management	-	10
		Non-management	-	20
		Councillors	-	20
Municipality Residents	:	Highridge	-	24
		Bwacha	-	26
Industrial	:	Manufacturing	-	25
Commercial	:	Markets	-	15
		Wholesalers	-	5
		Retailers	-	5

### **Data Collection Instruments**

Structured questionnaires and interview guides were used as instruments for collecting primary data. Secondary data were collected from reports, articles on Internet, thesis, conference proceedings and articles in journals and magazines.

### **Primary Data**

Primary data refers to data collected by researchers on their own “for the particular purpose of their research”; Bless and Achola, (1988: p74). In this study two types of primary data were collected. These were qualitative and quantitative data. Qualitative data was collected through both open-ended and closed ended structured interviews with officials from the Kabwe Municipal Council Management. Quantitative data were collected through closed and open ended questionnaires from the council residents, Councilors and non-management staff. Put together, there were a total of one hundred and fifty (150) respondents as sources of primary data for the study.

### **Secondary Data**

Secondary data refer to data collected by other researchers in connection with other research problems. In this study, secondary data were collected from already published and unpublished documents in the areas of solid waste management, Local Government Financing of Local Authorities and Local Government provision of public services. The sources of these documents included, individuals, books, Journals, Articles and interviews.

**Questionnaire**

According to Cohen and Manion (1992), a questionnaire is a general term to include all techniques of data collection in which a person answers question posed. It is a 'self-report instrument used for gathering information about variables of interest to an investigator'. It consists of a number of questions on a paper that respondents read and answer. One advantage of a questionnaire is that it is a cost effective way of collecting data. According to Cooper and Schindler (2003), the questionnaire is costly in terms of traveling and distributing to respondents. Open and closed ended questionnaires were used in the research.

**Interviews**

According to Saunders, Lewis and Thornhill (2007), an interview is a discussion between two or more people. An interview involves an interviewee (the person being asked questions) and interviewer (the person asking questions). Questions are asked in the same order and are structured in the completely open ended format; Best and Kahn, (2003). Kahn and Cannel (1957), informs us that, the word 'interview' is derived from a French word *étrevoir*, meaning glimpse to each other.

Interview is designed to collect varied and reliable information through the response of the interviewee to planned sequence of questions. Accordingly to Mulusa (1990), one advantage of interview is that many researchers view it as a powerful tool in social survey research, disadvantage being that a well conducted interview may last for hours.

An interview may be a structured or an unstructured means of collecting data from the interviewee. An unstructured interview is informal, where there is no predetermined list of questions while a structured interview use predetermined questions.

**Data Analysis**

The analysis of data was done using manual methods and the computer. The computer based Statistical Package for Social Sciences (SPSS) was utilized in the preparations of data templates and frequency tables. SPSS is a reliable and widely used computer based program for analyzing huge quantities of statistical data within a short period of time. Microsoft excel is another computer based programme which was utilized to produce graphs based on data analyzed using SPSS.

### **Triangulation**

Saunders, Lewis & Thornhill (2007: p132) define triangulation as “the use of different data collection techniques within one study in order to ensure that the data are telling you what you think they are telling you”. This is the use of more than one method in data collection. The use of combined methods of data collection was chosen to overcome the weaknesses associated with individual methods Robson (1993). It helps to give more detailed picture of the situation under study, Cohen and Manion, (1990). The method too accordingly to Yin (1993) helps to validate the information and increases the chances of accuracy. In this research, questionnaire and interview schedule were used.

### **Ethical Consideration**

Ninety two (92) of the respondents were unwilling to complete the self-administered questionnaire and be interviewed, but through explanation on the importance of the study, Sixty two (62) opened up and decided to participate in the study.

### **Limitations of the Study**

The study faced the following limitations:

- During this study, fieldwork visits or data collection was difficult, because some household members were too busy to fill in the questionnaires;
- The researcher generally had difficulties to get co-operation from some councilors who refused to answer because they wanted to be paid allowances before they could do so, thinking it was a government funded project and not an academic exercise;
- Initially, the researcher wanted to interview 20 Ministry of Local Government officials but most of them were not available and the number of staff has reduced drastically after the restructuring process in the department of Local Government and Administration (some posts have been abolished); and
- Bureaucracy, inadequate up to date records and to some extent coupled with poor record keeping by the council resulted into the researcher failing to have access to some documents having vital data. For example, records of central government grants received between 1992 and 2009 could not be made available.

### **Layout of the Dissertation**

In order to adequately address the subject under consideration the dissertation is divided into seven distinct related chapters.

- Chapter One, the introduction, gives the background information on the subject, outlines the broad and specific objective of the study;

- Chapter Two highlights the literature reviewed for the topic under study;
- Chapter Three outlines the findings of the study,
- Chapter Four presents analysis and discussion of the findings,
- Chapter Five is the recommendations and conclusion.

## **CHAPTER TWO**

### **LITERATURE REVIEW**

The reviewed literature on the LCC and ECZ report (1997) observes that the rapid rate of uncontrolled and unplanned urbanization in the developing nations of Africa has brought about environmental degradation. Indeed one of the most pressing concerns of urbanization in the developing world, especially in Africa, has been the problem of solid waste management, Wilson G (1977: p.14). Equally, recent events, such as heaps of garbage, litter and outbreak of diseases, in major urban centres like Cairo, Nairobi, Lusaka etc., in Africa have shown that the problem of waste management has become a monster that has aborted most efforts made by city authorities, state and federal governments and professionals alike. A visit to any African city would reveal aspects of the waste management problems such as heaps of uncontrolled garbage, roadsides littered with refuse, streams bloated with junk and disposal sites constituting a health hazard to residential areas; Wilson G. (1977: p17).

A study carried out by Palczynsk, (2002: p8) revealed that waste generation, both domestic and industrial, continued to increase world-wide in tandem with growth in consumption. He argued that in developing countries, waste management may double in volume in the current decade, if the current trend continues and that the world may see a five-fold increase in waste generation by the year 2025, suggested the need to develop an integrated approach where the public, private and community sectors worked together to develop local solutions, promoting sustainable waste management.

In this study, lessons about waste management practices were drawn from major municipalities in some African countries. The proceeding or ensuing paragraphs present brief summaries from selected countries:

#### **ZAMBIA**

The management of solid waste has over the years been a very difficult and challenging issue for Zambia. Even as we got political independence in 1964, we never got independence for a clean and health environment. Thus, we have not yet achieved Independence of a clean and health environment. ECZ, (2005: pvii)

This challenging issue has manifested itself when one looks at the perennial outbreak of diseases such as cholera, dysentery and pollution of water resources, air, soil, or land

contamination and the loss of aesthetic beauty. As a result, the inappropriate and often careless handling of domestic, municipal and industrial wastes including those that are hazardous has all too often created problems for human health and the environment; ECZ (2005: pvii).

Therefore, in order to make a clean and green Zambia, the government of the Republic of Zambia before enacting the Environmental Protection and Pollution Control Act No.12 of 1990 (EPPCA), initiated the formulation of the National Conservation Strategy (NCS) in 1985, to identify measures for improving waste management and subsequently the National Environmental Action Plan (NEAP)) in 1994. In both these documents, waste management among others was identified as one of the major environmental problems faced by the nation; ECZ (2005: p1).

To understand waste management in Zambia, one has to look at the lessons learnt on Lusaka City Council (LCC). Historically for the Cities in Zambia, for example, Lusaka City, the Lusaka City Council delivered solid waste management services directly financed through normal municipal financing channels such as government grants and property rentals on council owned properties or property rates. From middle 1980s to early 1990s, financing of Municipal Waste Management services through these traditional means was no longer attainable; LCC and ECZ (2004: p51). This was attributed to declining national economy which saw a significant decline in government grants to local authorities, Lusaka inclusive. The situation was exacerbated by the sale of the council owned housing stock which was one of the major sources of income for local authorities in form of rentals. Consequently, delivery of waste management services crumbled and was limited to sporadic collections at public trading places i.e. markets, or in emergency response during the disease outbreaks, mainly cholera. In other parts of the city, the private sector came into fill the void left by the council by providing waste collection services to those who can afford to pay directly. Therefore, waste management is a challenge for Lusaka City; LCC and ECZ (2004: p54). This case is a typical example of what is happening in Kabwe as well, disease outbreaks and failure by the council to provide waste management services to the public.

A research survey carried out by Lifuka, R. (2004: p4) on *Solid Waste Managers Cry for incentives*, argued that solid waste management in Zambia can only reach its potential if government provided incentives to the private sector. The study bemoaned poor waste management situation in the country, especially solid waste management that had not received

the national attention that it deserved. Lifuka lamented the situation that prevailed in the country where the private sector had narrowed waste management to mere collection, instead of investing in solid waste management. He, however, further suggested that a vibrant recycling industry for paper, glass, and plastic was an important component to waste management in Zambia.

On the other hand, Mwendalubi, D. (2001: p4-6) in the works entitled, *"In a Greener Zambia Begins With You"* noted that the country had over the years grappled with the problem of solid waste management that had caused it to lose the greening scenario it once boasted of. He adds that everyone remembers that way back in the 1980s, the country and particularly the city of Lusaka had no problems of uncollected garbage piling all over the city. As such, cases of outbreaks of cholera and dysentery were thus few. Mwendabai reveals that unsound waste management practices endangered the health and welfare of people and the environment. In fact, it is one of the reasons which compelled the government to set up the Environmental Council of Zambia as a mitigating measure, or as a vanguard in waste management and nature conservation. He wound up his discussion by noting that improved waste management systems would enhance tourism and promote health and living conditions for ordinary Zambians.

Another study reviewed was that of Majura, B. (1997: p6) who in *'Water and Sanitation'* discussed the problems affecting an efficient refuse management in the city of Lusaka. Four main points emerged from this literature review, namely; inadequate funds, shortage of refuse collection equipment and low capacity in skilled labour force and lack of political-will, a phenomenon that contributed significantly to the current worsened situation in the management of refuse in the City of Lusaka. Added to this, was an absence of public awareness and people's positive attitudes towards the dangers associated with improved refuse collection and disposal. Majura further brought in the issue of liberalized trade. He states that it promoted large scale street vending and roadside trading which increased waste accumulation and worsened the already deteriorated situation of the city of Lusaka.

Other lessons were drawn from the Research conducted by Kyambalesa, H. (2006:p7) who found out that Solid Waste, like air and water pollution, was a form of environmental pollution that was mainly a by-product of human activities. Therefore, it was an inescapable problem in every society. He observed that Lusaka City, like any other town in Zambia, was currently experiencing serious problems at all stages of solid waste management; that is, in the collection,

sorting, transportation and disposal of garbage. The research, however, attributed the accumulation of solid waste in Lusaka to the cardinal issue of lack of enforcement of by-laws relating to littering and other forms of contamination in public surroundings and lack of financial and material resources resulting from irregular support in the form of grants from central government.

Practical Action Publishing, (2002: p2) is another source that provide data about waste management in Lusaka. It revealed the deplorable state of waste management disposal in some townships of Lusaka. The case study of Marapodi compound was cited, and spelt out that the aforesaid compound had huge piles of rubbish throughout the township, making poverty persistent, ill health and low environmental quality part of everyday life. The works pointed out that random collection and indiscriminate dumping were a real threat to the environment and to life in general in the township. The Paper indicated that as a way of trying to combat the problems created by accumulation of the waste, community-based organizations were formed. In fact, they were responsible for collection of the waste from the informal settlement of Marapodi where the local authorities did not provide a collection service. These community-based organizations epitomize how local participation could help create a clean and disease free environment in which they lived. Therefore, residents in other townships and those of Kabwe inclusive could emulate this trend and apply it.

The reviewed literature was important in the sense that it gave insights into the beginning, causes and the dynamics of waste management in various cities of African countries and how different countries have grappled with the problem. More important, it is noted that there is no single solution to the problem and thus this provides various researchers a challenge of analyzing attempts aimed at finding a solutions to waste management, a phenomenon that seems to be an endemic problem in African cities and towns.

### **Kabwe**

The town of Kabwe is situated mid-way between Lusaka city, about 130 km to the North, and Ndola about 170 km to the South, is now a transit town. The town of Kabwe is where Zambia's most famous prehistoric Broken Hill Man was found in the 1920s. The Kabwe skull (often known as 'Broken Hill Man') was found on the 17<sup>th</sup> June, 1921 by a Swiss Miner, Tom Zwiglaar, in a limestone cave. It was the first early human fossil to be found in Africa and was sent to Auther Smith Woodward who gave it a new name, Homo Rhodesiensis or (Rhodesian man); Kachingwe, K (2007)

Originally, the town was known as Broken Hill, named after a similar mine in Australia. The mine became one of the biggest mines before the advent of copper mines on the Copperbelt. The name Kabwe or KabweKa-Mukuba meaning 'ore' or 'smelting' occupies a mine which occupies 2.5 km site just 1 km South-West of town centre and is now closed but metals are still extracted from old trailings. The Blacksmith institute website (2007).

Aside from the mining expeditions, Kabwe town also housed the first railway in the country, operated by Rhodesian Railways when the territory was administered as North-Western Rhodesia and North Eastern Rhodesia. The Railway Line reached the broken Hill Mine as early as 1906. The town became the Northern base for the railway, which was the second biggest employer after the mining industry. A locomotive maintenance facility was constructed there. In 1909, the railway reached Ndola and was to become the Copperbelt in the late 1920s. Kachingwe K (2007).

In addition, in a racially segregated colonial times before Africans had a vote, the Railway Workers Union played a large role in politics of the country. The town was the seat of Roy Welensky, leader of the powerful Rhodesia Railway Workers Union (RRWU), who became Prime Minister of the Federation of Rhodesia and Nyasaland, which was opposed by the Northern Rhodesia Railway Trade Union (the black African Union) led by Nixon Konkola also based in Kabwe. Kachingwe K (2007).

Reflecting Kabwe's central location and Railway Union base, it was chosen as the site for a rally held on October 26, 1958, at Mulungushi Rock, which is situated north of the city by the Kaunda – Kapwepwe breakaway group from the Zambia African National Congress. Later, they founded the political party, United National Independence Party (UNIP) which led the successful Independence movement and continued to hold conferences at the now renamed Mulungushi Rock of Authority, now referred to as the birth place of Independence in Zambia.

### **Colonial Local Authorities**

Kabwe town initially started as a mining centre in 1902, following the discovery of lead and zinc in the area. At that time it was called Broken Hill, named after a similar mine in Australia. It was run by the Broken Hill Company which was established by the British South Africa (BSA) Company a front runner organization of British imperialism. The Broken Hill Company was responsible for the development of the town as well as provision of services. However, between

1927 and 1933, the British Colonial Government which had taken over the running of Northern Rhodesia in 1924 enacted three (3) ordinances namely, the Municipal Corporations, Townships and Mining Townships Ordinances. This enactment led to the establishment of the Municipal and Township Councils to provide services in communities occupied by mainly the whites in the urban areas and the native Authorities in rural communities (Lolojih, 2006:37). The aforesaid councils ran the affairs of their respective areas up to the attainment of independence.

### **Post-Independence Local Authorities**

Zambia got its independence in 1964 and has had three republics so far. The period from 1964 to December 1972 constitutes the First Republic while 1<sup>st</sup> January 1973 to 17<sup>th</sup> December 1990 is referred to the Second Republic and the remaining period makes up the Third Republic.

### **Local Authorities in the First Republic**

After independence, the new government enacted the Local Government Act of 1965 that came into operation on November 1 of that year to equitably deliver services to the residents of various communities within the country. The Act provided for three types of local authorities namely; municipalities, townships and rural areas. Evidence from field work has revealed that services in townships such as Luangwa and Chowa of Kabwe were provided by the mining company, whereas residential areas such as Highridge and Bwacha were catered for by the municipal council. (Respondents from Luangwa, Highridge and Bwacha, 2009). Then the rural areas of Kabwe were attended to by Kabwe Rural Council. The division in the provision of services by the separate local council bodies is in line with Kapur's (2001:691) description of local government which states that:

*"they are corporations, municipalities, district boards and other bodies entrusted with the execution of functions relating to and concerning the residents of a given area or locality".*

From this quotation, it is clear that local governments are assigned to run and provide public services in specific areas under their jurisdiction.

### **Local Authorities in the Second Republic**

In January 1973, the method of governing the country changed from multi to single party form of governance. This change triggered other changes within the Central government as well as the local government. To begin with, the operations of the local council were realigned in order to support the new arrangement. For example, the United National Independence Party (UNIP),

the ruling party of that time, was made prominent in the running of the affairs of the nation by the constitution change of 1972. This was so because it's local party structures were merged with local government structures. Since UNIP was the ruling party, it had more authority in decision making in all organizations in the country which included local councils such as the Kabwe Municipal Council. Even so, this authority at times led to poor performance of a number of organizations. In support of the foregoing statement, Lolojih; (2006: p37) observes that:

*“the merging of the local party structures with the local council opened avenues for rampant financial mismanagement and diversion of council resources to party activities.”*

This affected service delivery of all the councils, the Kabwe Municipal Council inclusive. This was so because money meant for services was misused by the ruling party which could not be controlled as it was superior to all the organizations within the country and any complaint against the party at that time could result in an individual being labeled a dissident and consequences for such were severe. A respondent, who has lived in Bwacha since 1969, echoes Lolojih's observation by stating that she began seeing the deterioration of services offered by the council as early as 1975. She added that before the aforementioned year the council used to distribute dustbins in Bwacha compound where residents dumped refuse which it used to collect twice in week. Later, refuse collection became more erratic and eventually stopped. The merger of the local party and the local council was made possible by the replacement of the Local Government Act of 1965 by the Local Administration Act of 1980, leading to the imposition of inappropriate local government structures which were no longer responsive to the residents' welfare in terms of service delivery. And this was the pattern of running Local councils from 1981 to 1991.

### **EGYPT (Cairo)**

In a paper entitled “Solid waste Management: overview of Egypt”, presented by Amin Zawani in February 2010, revealed that waste management services had been privatized in some Egyptian cities, and that Egypt was trying to adopt an integrated solid waste management system. Already, the government of Alexandria had awarded a 15 year contract to the French firm ONYX (VIVENDI), to carry out waste management services. However, the study brought out weaknesses in waste management in Cairo, Egypt, which included:

- Lack of alternative mechanisms for collection of service charges;
- Engineered landfills did not exist at this time.

The study also reviewed the usage of Zabbalean. This was a group of 50,000 people traditionally involved in the business of waste collection process. They received and/or recycled

between 70% and 80% of all collected plastics, metals, glass, paper and other components of the waste stream and produced fertilizer in the form of organic waste composting, and raised pigs that were fed on garbage, on a commercial scale. Other African countries could profit from the Zabbaleene experience, although the literature did not deal with what happened to waste disposal management when councils in Egypt did not receive grants from the central government.

### **SOUTH AFRICA (Cape Town)**

This case study revealed that South Africa was one of the countries that had a well-developed waste management industry which was able to serve the needs of the country. The government underscored the importance of preventing pollution to reduce waste generation in the first place and avoided environmental degradation. The total amount of waste accounted for disposal in Cape Town, in particular was around 2 million tones per annum. More than 95% of domestic trade, industrial and hazardous waste were land filled which remained widely used in South Africa and was the cheapest option. Landfills were privately owned. The Cape Metropolitan Area handled recycling of materials from domestic, commercial and industrial wastes, which were composted and deposited at the waste water treatment sludge. Composting domestic waste and the beneficial re-use of waste water treatment plant accounted for approximately 24% of the total solid waste stream in Cape Town. Waste stakeholders included the Government, private sector, Non-Governmental Organizations (NGOs) and the general public. Cape Town had adopted a concept of integrated pollution and waste management that government used in its envisaged national policy. It is one of the cities that had made efforts to improve waste practices, which could be emulated by other countries in Africa, Zambia inclusive. It must be noted that this literature referred to the situation that prevailed during Apartheid Era when urban areas were largely inhabited by fewer whites, and the majority blacks lived in rural areas. While waste disposal was privatized in South Africa, this proposed study intended to investigate in Zambia where councils themselves managed waste disposal but with reduced financial assistance from the central government. [www.capetown.gov.za](http://www.capetown.gov.za)

### **SOMALILAND**

A study by Arre, N. (2008:p23-36) showed a typical waste management system, in a country like Somali which displayed an array of problems such as low collection, or irregular collection services, indiscriminate open dumping and burning without air and water pollution control. According to the United Nations Center for human settlement, only between 25 and 55 percent of all waste generated in cities was collected by municipal councils. In Somaliland, poor waste management enhanced or propagated and, in fact, promoted the breeding of flies and pests,

rats and mice, cockroaches and parasites, fleas and lice, bed bugs and other scavengers and disease-transferring agents. Therefore, the emphasis of the study was on safe disposal. Arre also brought out the importance of effective municipal solid waste management. He noted that it called for appropriate distribution of responsibilities, authority and revenues and that waste generation was also a condition by people's attitudes. The scholar goes further to look at factors that hampered waste management such as social status of solid waste management workers and pointed out that it was generally low. This illuminated how to keep the surroundings healthy in Somaliland, perhaps under conditions of peace. But what happened when councils were not assisted by their central government were issues not covered in the reviewed literature.

Lessons were also drawn from Achankeng's E. (2003: p168) *Globalisation, Urbanization and Municipal Solid Waste*, in which he revealed that globalisation had raised some troubling concerns for the development of the world. One such concern was its impact on urbanization and the ramifications that went with it. One key challenge of globalization was the management of municipal solid waste. The study identified globalization entity that was playing a negative role in solid waste management in African cities. The impact included the transport of globalised or internationalized waste management methods and ideologies. He suggested that most African countries had copied from the developed World ill-adopted global strategies and technology, not suitable to the local realities. The realities of local authorities largely fending for themselves in keeping the environment clean were not examined in this global approach to solid waste management.

### **Lessons Learned from the Literature**

- From the literature review presented, we learnt and drew lessons that solid waste management is a big problem in Zambia. We further learnt from the Literature that Councils in Zambia do not have adequate resources to effectively manage solid waste.
- Another lesson learnt from the Literature is that lack of effective solid waste management strategies by Councils is a major source of both water and airborne diseases.
- Equally, we learnt that from Literature that very few studies have been conducted in Zambia, until now, there is no empirical research on the effect of reduced Central Government grants on the capacity of KMC to provide effective solid waste management services. The absence of this empirical research was the main drive of this investigation.

### **Conclusion**

This chapter has shown that central government's policy decisions to reduce grants to local

authorities and equally other policy and operational decisions imposed on the council as dictated by the World Bank and the IMF, the financiers of the government, negatively affected performance of Kabwe Municipal Council and other councils in service delivery. The chapter has also revealed that to survive economically, the government sought the assistance of the IMF and the World Bank prescribed conditions which made the government withdraw from the provision of social services by way of subsidizing commodities. The chapter concludes by demonstrating that the consequences of implementing IMF and World Bank's conditions such as reduction in central government grants to local councils, reduction of manpower in local councils and their eventual withdrawal of the provision of services which previously earned them some revenue resulted in general failure by Kabwe Municipal Council and other councils in the country to provide public services in general and to manage the waste in particular. And this resulted in accumulation of the garbage in townships.

### CHAPTER THREE

#### THE MAIN FINDINGS OF THIS STUDY

The presentation of data is in form of tables, pie charts and descriptive content as shown below;

##### Distribution of Questionnaires to Respondents:

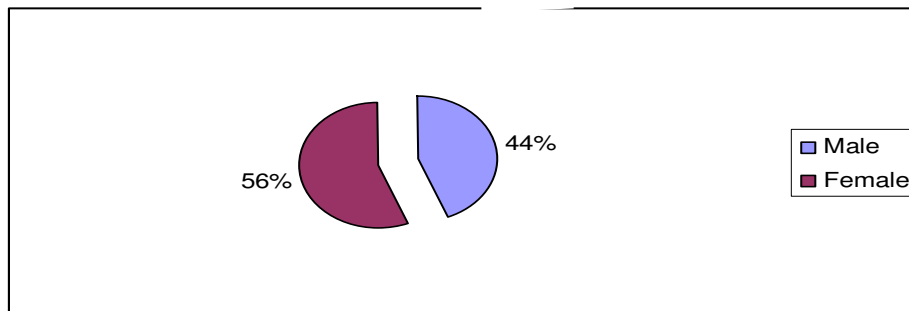
Name of the Sector	No. Of Questionnaires Distributed	No. Of Questionnaires Returned	Percentage (%)
Kabwe Council staff	50	45	90
Kabwe Residents	50	39	78
Industrial	25	19	76
Commercial	25	17	68
<b>Total</b>	<b>150</b>	<b>120</b>	<b>80</b>

Out of the 150 copies of questionnaires distributed, 120 copies were returned. The return rate was 80%.

##### Section A: Presentation of demographic information findings:

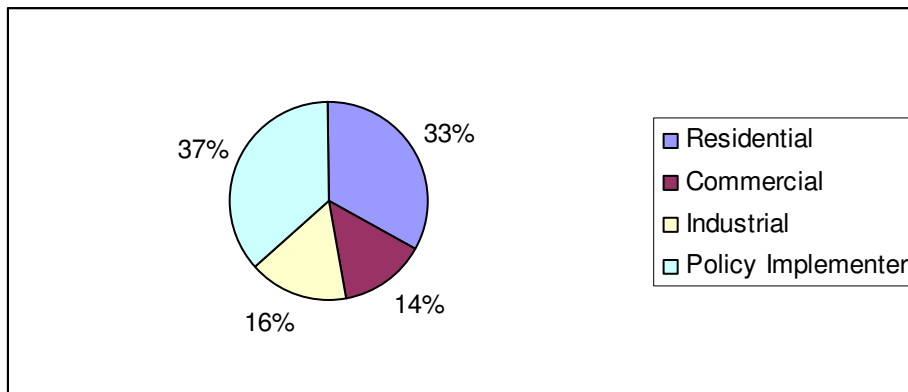
From the 120 copies returned, 53 were male respondents and 67 were female respondents representing 44% and 56% respectively as below;

##### Distribution of respondents according to gender:



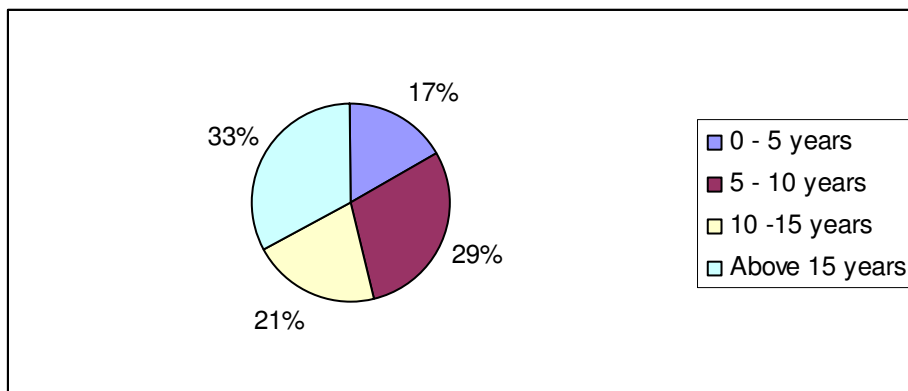
The distribution of questionnaires to respondents according to where they operated from was that 45 copies representing 37% operated from policy implementer sector, 39 copies representing 33% residential sector, 19 copies representing 16% industrial sector and 17 copies representing 14% commercial sector.

### Distribution of respondents according to where they operated from



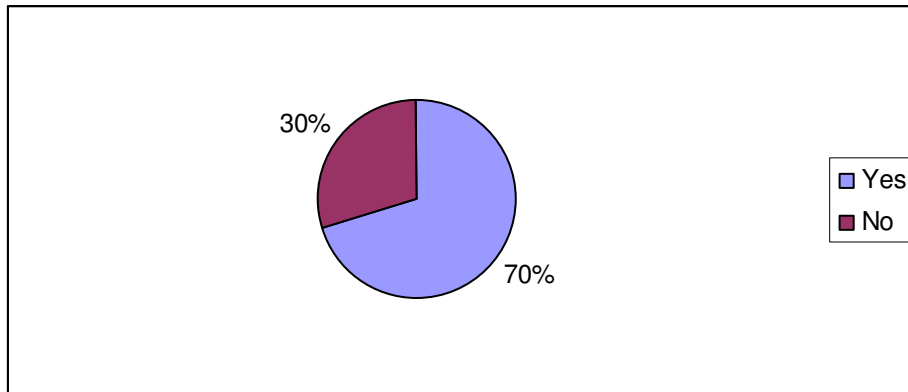
Responses of respondents according to period of stay in Kabwe were as 0 – 5 years 20 responses representing 17%, 5 – 10 years 29 responses representing 29%, 10 – 15 years 25 responses representing 21% and above 15 years 40 responses representing 33%:

### Distribution of respondents according to period of stay in Kabwe:



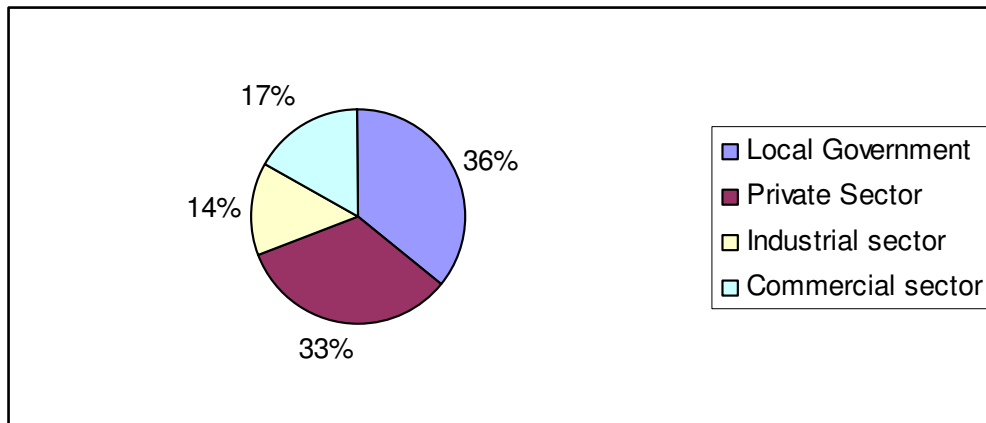
The distribution of questionnaires to respondents according to employment status was that 84 copies representing 70% were in employment and 36 copies representing 30% were not.

#### **Distribution of respondents according to employment status:**



According to type of employment, the respondents' response was that 36 responses representing 36% were employed under local government sector, 33 responses representing 33% private sector, 17 responses representing 17% commercial sector and 17 responses representing 14% industrial sector.

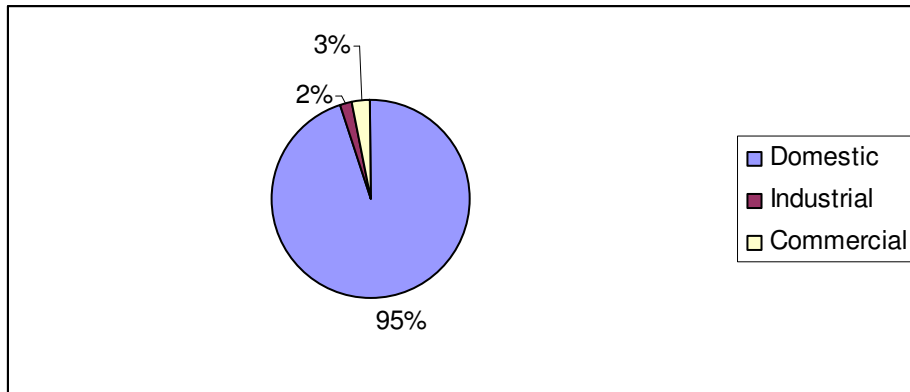
#### **Distribution of Respondents According To type of employment:**



#### **Presentation of solid waste management findings:**

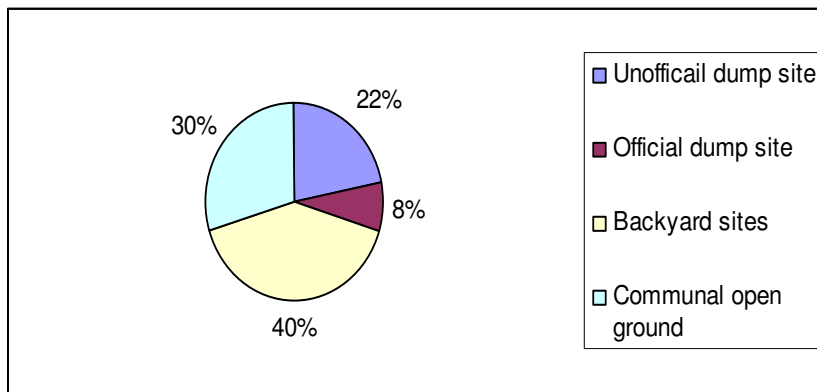
Responses according to type of waste respondents produced were that 114 responses representing 95% was domestic waste, 3 responses representing 2% was industrial waste and 5 responses representing 3% was commercial waste,:

### What type of waste do you produce?



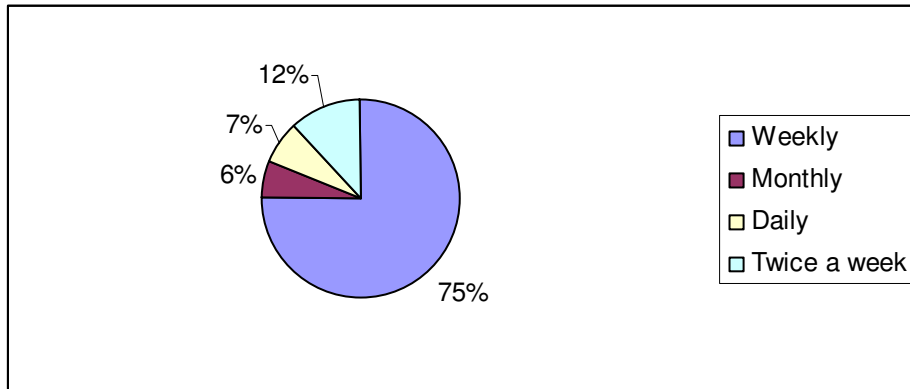
Responses indicated how respondents disposed off solid waste as unofficial dump site 26 responses representing 22%, official dump site 10 responses representing 8%, backyard sites 48 responses representing 40% and communal open ground 36 responses representing 30%:

### How do you dispose of solid waste?

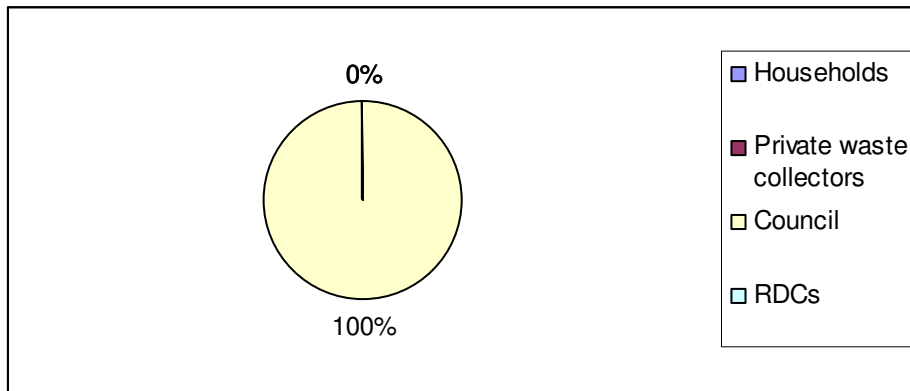


Responses on how many times should waste be disposed at dumping sites was that weekly 90 responses representing 75%, monthly 7 responses representing 6%, daily 8 responses representing 7% and twice a week 15 responses representing 12%:

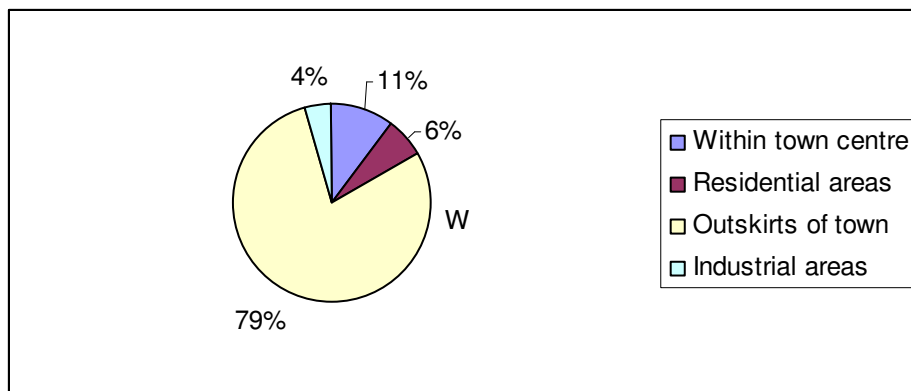
### How many times should waste be disposed of at dumping sites?



Responses according on who should provide areas of waste disposal was overwhelming 100% that the council should provide dumping sites.

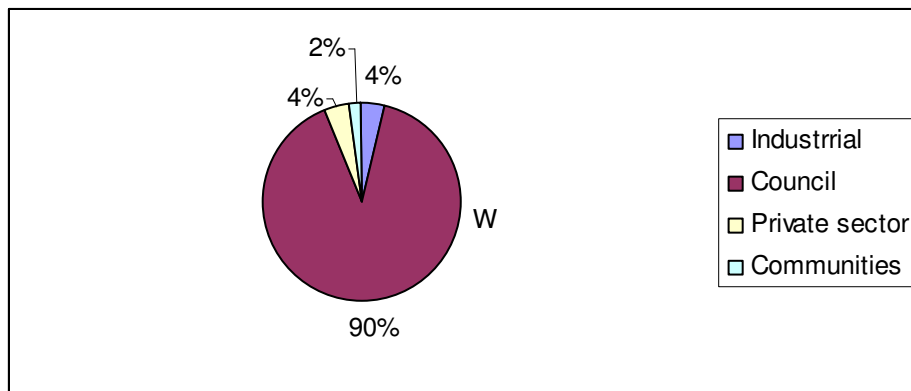


Responses on where should the dumping sites be located was 90 respondents representing 79% mentioned that the location of dumping sites be on outskirts of town, 12 respondents representing 11% mentioned within town, 7 respondents representing 6% mentioned residential and 5 respondents representing 4% mentioned industrial areas.



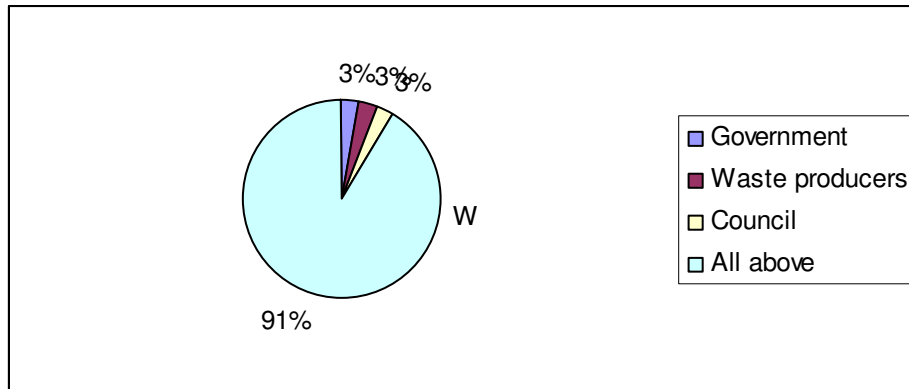
Responses on who is responsible for collecting waste were from 108 respondents representing 90%. Of these, 5 respondents (4%) mentioned that the responsibility was for the council, 5 respondents (4%) mentioned industrial and private sector respectively, and 2 respondents (2%) mentioned Communities.

#### Whose responsibility is it to collect waste?



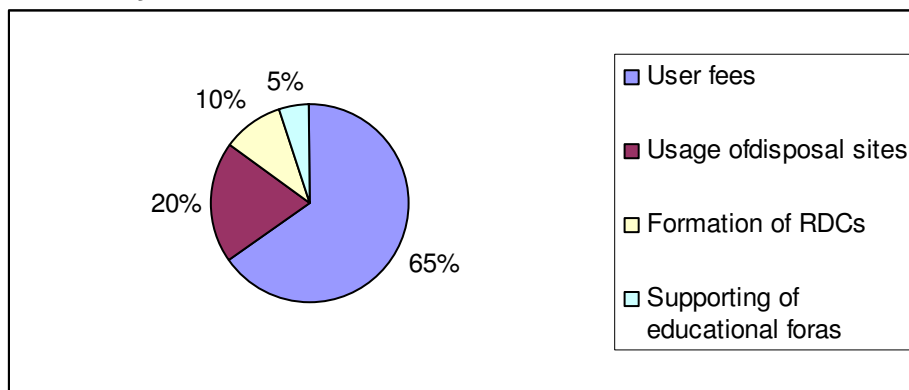
According to the respondents on who should contribute towards the collection of waste, 108 responses representing 91% registered that all the stakeholders should contribute towards the collection of waste, and 4 responses each representing 3% said either government or waste producers or council alone should contribute towards the collection of waste.

### Who should contribute towards collection of waste?



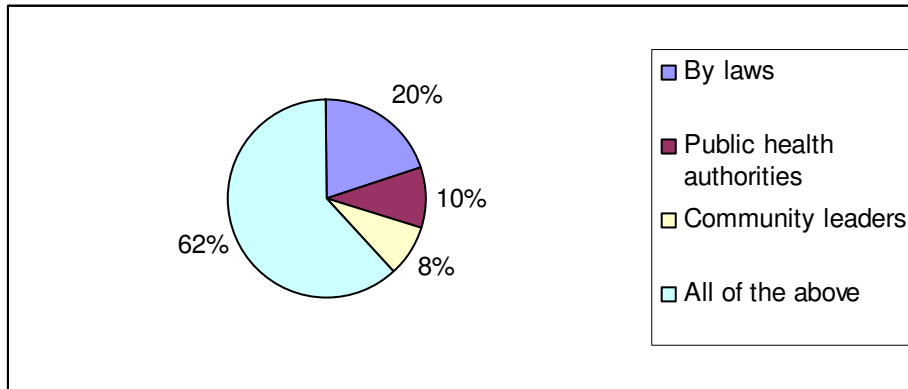
Responses on how can you contribute towards waste collection, 78 respondents representing 65% pointed at user fees as contribution towards waste collection, while 24 respondents representing 20% were for the usage of disposal sites, whilst 12 respondents representing 10% pointed at formation of RDCs and 6 respondents representing 5% stood for educational fora.

### How can you contribute towards waste collection?



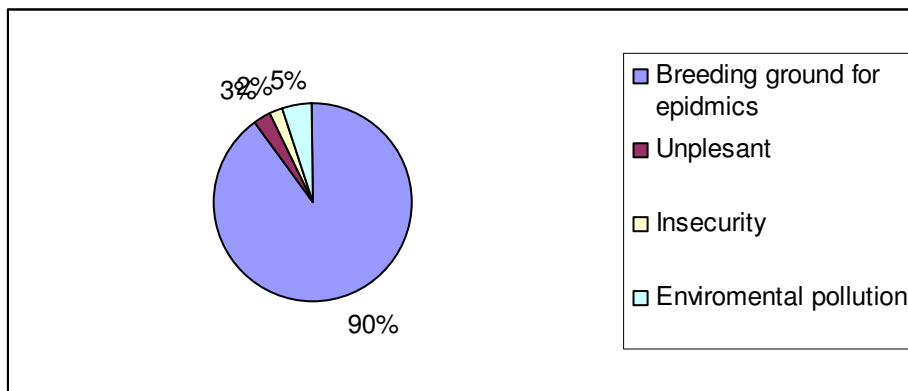
Accordingly to respondents on through which way should waste producers be compelled to manage waste, 74 respondents representing 62% supported measures to manage waste by all the community leaders, public health authorities and by law, hence 24 respondents representing 20% were for provision of by law, 12 respondents standing for 10% mentioned public health authorities and 10 respondents representing 8% said community leaders.

### Through which way should waste producers be compelled to manage waste?



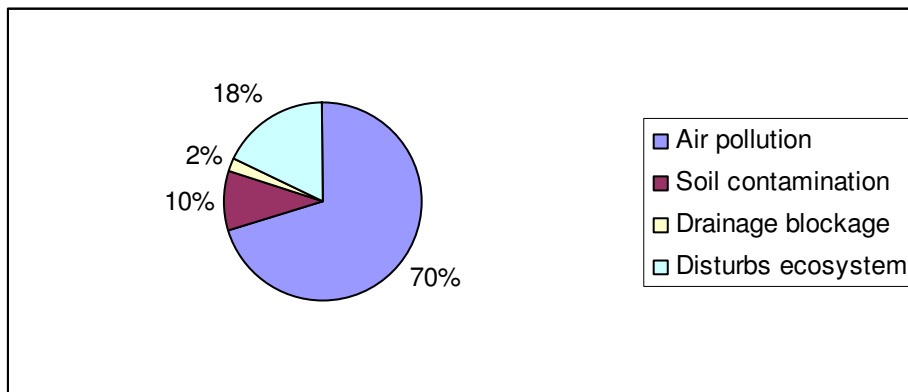
Responses on how does waste affect people 108 responses representing 90% registered breeding ground for epidemics to affect people, 6 responses representing, 5% environmental pollution, 4 responses representing 3% unpleasant effect and 2 responses representing 2% people feeling insecure:

### How does waste affect people?



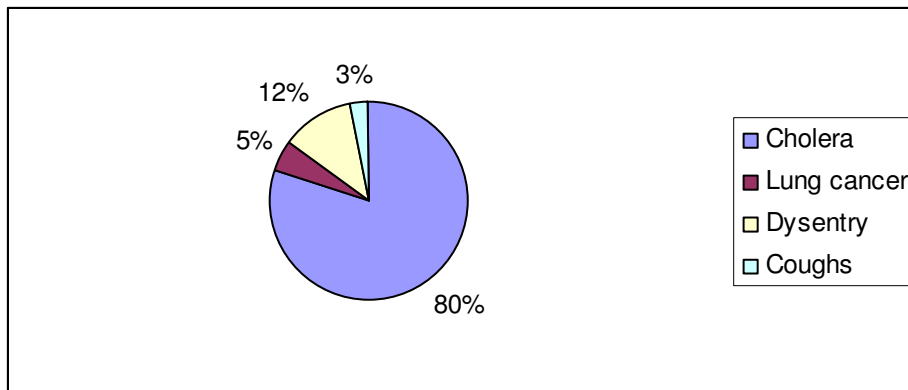
Responses of respondents on how does waste affect the environment, 84 responses representing 70% revealed air pollution, 22 responses representing 18% disturbs ecosystem, 12 responses representing 10% soil contamination and 2 responses representing 2% drainage blockage:

### How does waste affect the environment?



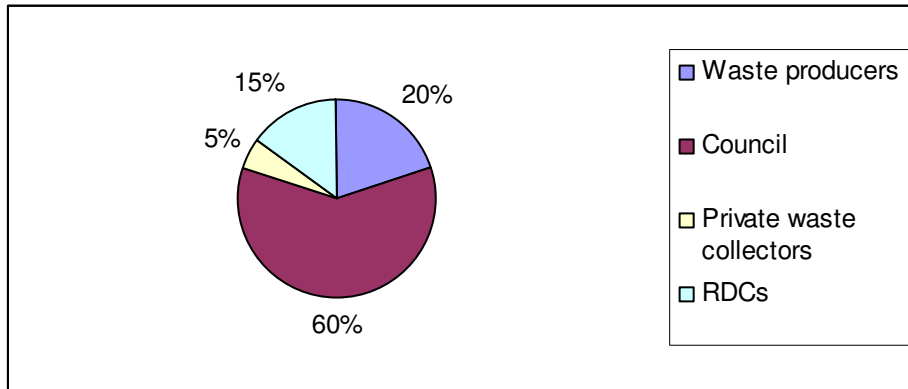
Accordingly to the respondents according on which disease has high degree of occurrence in waste contaminated area, the responses were that the disease likely to occur in waste contaminated areas is cholera at 80%, followed by dysentery at 12% then lung cancer 5%, and lastly coughs at 3%.

### Which disease has high degree of occurrence in waste contaminated area?



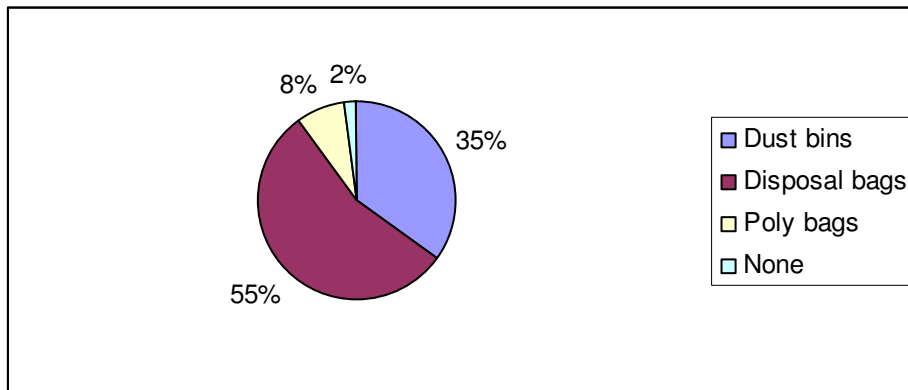
Responses of respondents on who should facilitate the disposal of waste, 72 responses representing 60% indicated the council to facilitate disposal of waste, 24 responses representing 20% supports waste producers, 18 responses representing 11% are for idea of RDCs and 6 responses representing 5% of respondents view that private waste collector as more suitable.:

### Who should facilitate the disposal of waste?



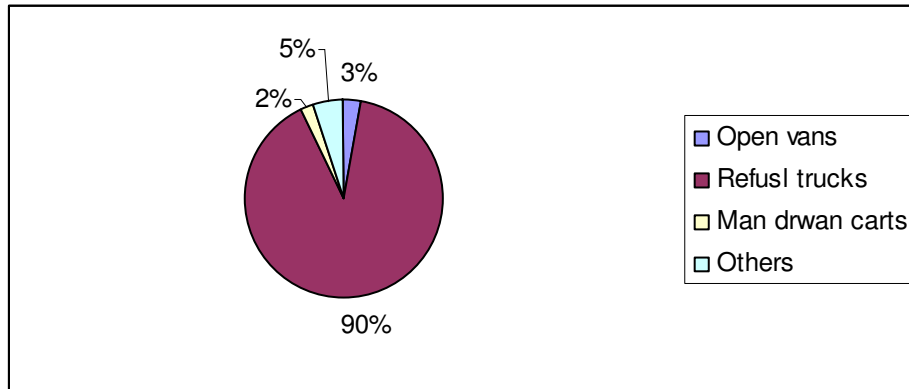
Responses of respondents on what storage mode is used for waste before disposal, 66 responses representing 55% indicated the use of disposal bags, 42 responses representing 35% indicated dust bins, 10 responses representing 8% poly bags and 2 responses representing 2% none of either disposal bags or dust bins nor poly bags:

### What storage mode is used for waste before disposal?



Responses of respondents on which mode of transport is preferable to dump waste, 108 responses representing 90% prefer refuse trucks, 6 responses representing 5% other means than refuse trucks or open vans or man drawn carts, 4 responses representing 3% usage of open vans and 2 responses representing 2% man drawn carts:

### Which mode of transport is preferable to dump waste?



### Interviews presentation

The study also used interview schedule to collect data from selected respondents on solid waste management. The interview schedule had twelve (12) questions. Ten (10) interviews were conducted out of fifteen (15) earlier planned. Four (4) interviews were conducted with Kabwe Council staff, two (2) with residents, two (2) from industrial sector and two (2) from commercial sector. Most of the interviewee had been longer experience in the solid waste management

### Interview of Respondents:

Name of the Sector	No. Of Interview earmarked	No. Of Interview conducted	Percentage (%)
Kabwe Council staff	5	4	80
Kabwe Residents	4	2	50
Industrial	3	2	67
Commercial	3	2	67
Total	15	10	67

Out of the fifteen (15) interviews earmarked, ten (10) interviews were conducted. This gave a rate was 67%.

From the ten (10) interviews conducted 40% of the interviewees felt that the central government should allocate resources to the local authorities. They also reviewed that although reduced grants were adequate to cater for the management of solid waste, much of it was diverted to pay personal emoluments. On the whole 40% of KMC staff confirmed that government disburses

grants to councils although the figure has been reduced from what was disbursed up to 1992. However, the staff still felt the reduced funding was able to service the solid waste management service delivery, salary

However, since 40% of interviewed further argued that the reduction could not have any significant effect on the solid waste management service delivery, the council would still carry out their solid waste management effectively, if only the reduced grants were not misapplied.

On the contrary, three (3) out of ten felt that central government should increase the funds if services are to be adequately delivered. This translated into 30%. However, three (3) 30% out of ten of interviewees responded that they knew nothing about the grants. Furthermore, the researcher was not privy to the actual amounts of funds that central government disburses to local authorities annually. All the interviewees affirmed that the resources allocated to councils for service delivery were adequate, thereby making it reliable to carry out waste management activities.

## CHAPTER FOUR

### ANALYSIS AND DISCUSSION OF STUDY FINDINGS

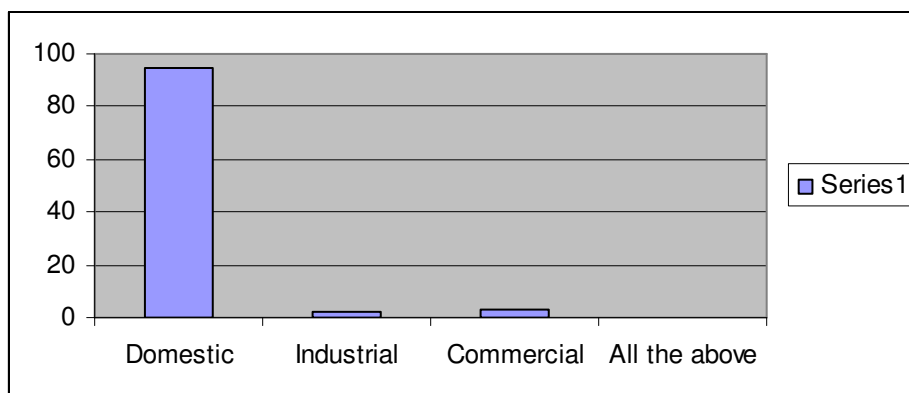
In Kabwe town, indiscriminate dumping, irregular collection of waste resulting in heaping of waste and overflows and inadequate resources which situation has resulted in outbreaks of communicable diseases are the key problems in solid waste management. Therefore, the main objective of the study was to evaluate the underlying factors affecting waste management in kabwe and suggest possible measures to tackle the problem. Below are the key findings of the study.

#### KEY FINDINGS

Through the analyses, the Following are the Key findings of the study. These are discussed below;

#### TYPES OF SOLID WASTE GENERATED IN KABWE

In different places, classification of the waste is done differently. In Zambia, for example, the Environmental Council of Zambia, hereafter (ECZ) has classified the waste generated in the country into two main categories. These are the municipal and the industrial waste. It has also pointed out that the two can further be divided into household/domestic and commercial waste; ECZ (2001 p104). In this study, it was revealed residents of Kabwe produced three (3) notable types of waste as shown below;



According to figure above, 95% of the respondents noted that the waste produced was domestic, 3% said commercial and 2% indicated industrial.

## **Domestic Waste**

Even so, for its convenience, this study has classified the waste that was generated in Kabwe into household/domestic, industrial and commercial waste. Among other things, household or domestic waste refers to food leftovers, banana and orange peels, ground nut shells, rags, ash, old magazines, toilet and ordinary paper, yard trimmings, leaves from trees growing in yards and slashed grass from yards, old torn shoes. Others included; containers of pesticides, insecticides, perfumes, hand and body lotions, empty plastic containers of cooking oil, empty bottles of beer and other beverages and empty sacks of mealie-meal. This type must have contributed most to the accumulation of waste in Kabwe. This is so because if things happened in accordance with the findings CHAPTER of E.C.Z (2001:p104), which spells out that an average Zambian produces about 0.45kg of waste per day”, then many kilogrammes of the waste were generated per day, month and year.



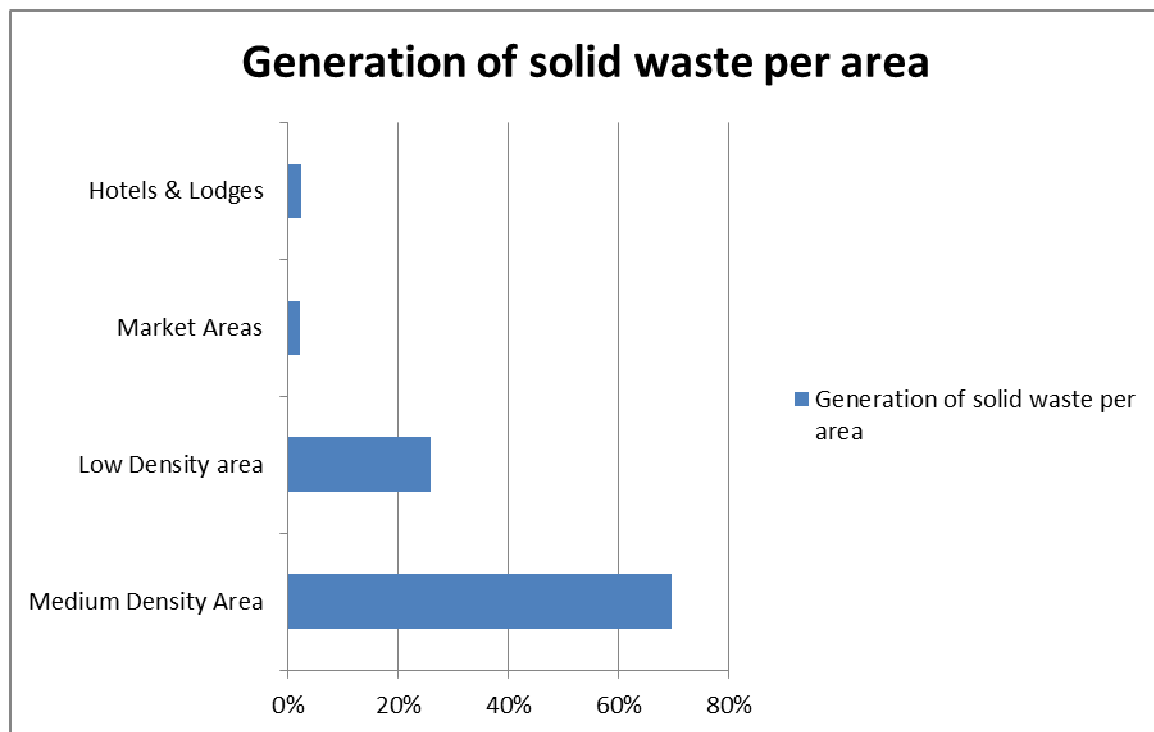
Domestic waste

This can be attributed to the relatively large population of the townships, especially that of Bwacha. In fact, the same document further estimated that medium density areas (such as Bwacha) generated 36,493 tonnes of waste, while low density areas (such as Highridge) generated 13,678 tonnes. Other estimates were for the markets which stood at 1,1783 tonnes and for the hotels, which contributed 1,293 tonnes, E.C.Z (2001:p104).

The estimates of ECZ have been supported by Panneerselvam and Rmakrisnan (2005: p66) who have written that:

*“Every day each person produces at least 500gm of waste. In industrial countries, the average output can be as high as four kilograms per person. This is a throwaway society. Every year nearly 400 million tonnes of garbage is thrown away all over the world.”*

#### *Generation of solid waste per area*



The Kabwe situation could not be different from the one that has just been described which experiences similar conditions. The other form of waste that accumulated in the town centre, as well as the townships, was that generated by the quest of the economy and that which came about as a result of population increase. Debris from part of the pulled down buildings caused by renovations of houses and improved living standards of the people also massively contributed to accumulation of the waste, especially in the low density area of Highridge. In a similar development, Bond and Straub (1973:p179) who have discussed the waste in America observed that:

*“The economic and population growth on our nation, and the improvements in the standards of living enjoyed by our population have required increased industrial production to meet our*

*needs and have made necessary the demolition of old buildings... have resulted in rising tide of scrap, discarded and waste materials."*

From this quotation, it can be deduced that some of the waste is generated by people whose economy is doing well. As a result, such people begin to carry out renovations to their houses in order to live more comfortably. As they do so, they create waste in form of debris. This actually happened in Kabwe as well and such household waste was found in the backyards, as well as on the various streets of the townships where it accumulated into huge heaps. In the study, 40% of the respondents indicated that they dispose waste at their backyards, whilst 30% said they use communal open grounds. However, 22% uses unofficial, while 8% use official dump sites.

### **Industrial Waste**

As indicated above, the next form of waste was the industrial one and it refers to the waste that was generated by the industries in the course of production. In the case of Kabwe, the main items which made up this category were pieces of garment and discarded cotton wool from the Zambia - China Mulungushi Textile factory and plastic material from the Kabwe Industrial Fabrics Company, hereafter (KIFCO) and crushed sunflower, sunflower-shells and broken bottles from the Company called B.R.R., which was manufacturing cooking oil. The industrial waste littered mainly the Bwacha Township where it was ferried by the wives of retrenched council workers who sold mostly the discarded materials and rags of garment to carpenters who used them for making furniture and cushions and some businesswomen who used the discarded cotton to make cheap pillows which they sold to people in low income groups.



Industrial Waste

Furthermore, the plastics from KIFCO littered the Bwacha Road where they were blown by the wind. And there was no one or organization to dispose off this waste. The study's findings (about the industrial waste) have also been experienced in other places. Discussing how industrial waste is generated by various industries; E.C.Z (2001: p206) noted that:

*“Various industries such as manufacturing (of edible oil, sugar), refining (petroleum), chemicals (e.g. Nitrogen Chemicals of Zambia...exist in Zambia. These produce a variety of wastes that are both hazardous and non-hazardous. The extraction of raw materials and energy production are also principal sources of waste and cause of problems.”*

The observation made by ECZ simply confirms what the residents of Kabwe had also seen it prevail in their town.

### **Commercial Waste**

The last form of waste as indicated in this study was the commercial waste. It is composed of all items which were involved in trade. At that time, the main industries which used to employ people in Kabwe, the Zinc and Lead Mine and the Kabwe Pharmaceutical Company, had been closed in the 1990s. Besides, the population of the town had increased owing to various factors. As a result, many people in the town had resorted to trading as one of the means of survival.



Commercial Waste

Ireen Chola, a house wife of a retrenched Council worker from Bwacha and Weakingson N'gonga, who had lost employment owing to the closure of the Kabwe Pharmaceutical company, which he used to work for said that:

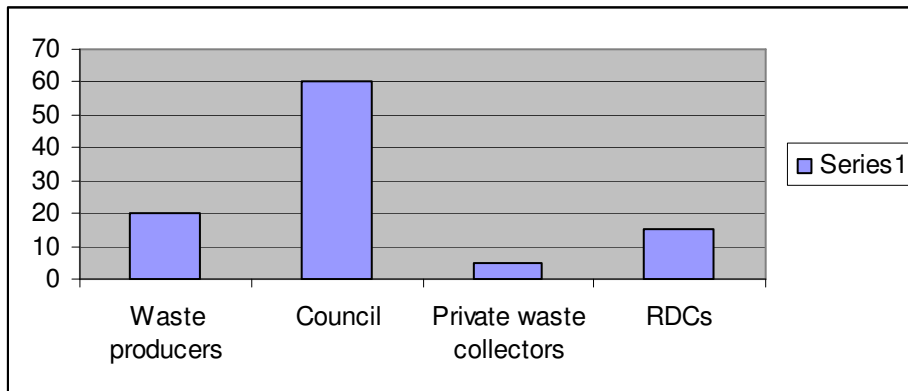
*“Trading became the obvious means to those who wished to survive the economic hardships which followed soon after the massive loss of employment in Kabwe.”*

The outcome of increased trend of trade was the production of commercial waste on a large scale. Prominent waste from this category included sachets of a popular type of alcohol locally known as Utujilijili, disposable packets of the “white” opaque beer called shake-shake, Lusaka and Nkhwazi beer, mass produced plastic bags used for packing and carrying items and transparent small plastic bags, which were used by traders for making ice-blocks and for selling refrigerated water at bus stations and in streets. Other items which belonged to this group were; disposable plastic bottles of mineral water and soft drinks, disposable plastic containers of a beverage drink called Maheu, newspapers in which traders wrapped food stuffs such as roasted groundnuts and cassava, boiled potatoes and eggs and ordinary paper where chips were wrapped. Much of the commercial waste was found in town centre as well as in streets leading to townships. Discussing the management of the waste generated by traders in America, Bond and Straub (1973: p179), recorded that:

*“The continuing technological progress and improvement in methods of manufacture, packing, and marketing of consumer products have resulted in an ever mounting increase and in a change in the characteristics of the mass of material discarded by the purchaser of such products.”*

## WASTE DISPOSAL

The effects of failure to collect and dispose of waste which was caused by reduced funding from Central Government on the environment and residents of Kabwe townships of Bwacha and High-ridge (which in this case includes the adjacent townships of Chimanimani and Ngungu) were many, varied and even devastating at times. The figure below shows who should facilitate the disposal of waste.

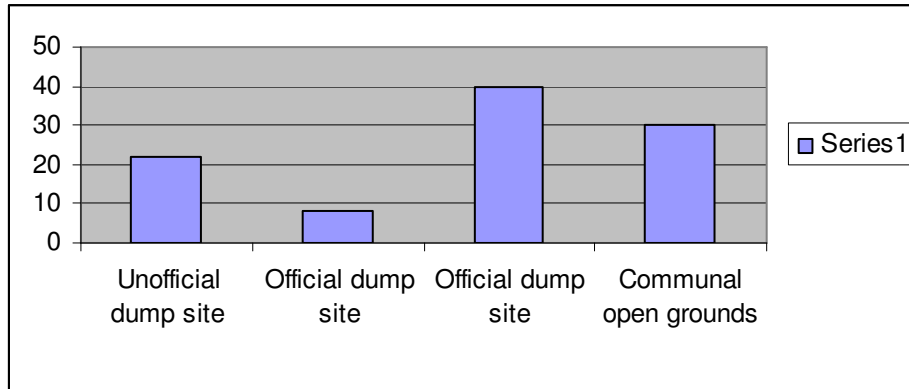


It was revealed that 60% of the respondents noted that the council is tasked to facilitate the disposal of waste, 20% thought the waste producers themselves, 15% Residential Development Committees (RDCs) and 5% private waste collectors.



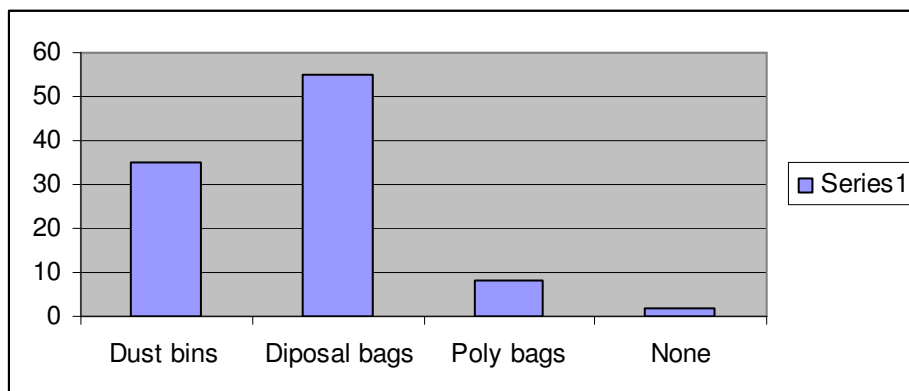
Dustbin positioned in the walk way

What compounded the problem even further was that the Municipal Council did not establish a disposal site in the district, (Post Newspapers, Tuesday, July 28, 2009).



The study as in the figure above revealed that 40% of the respondents indicated that they dispose waste at their backyards, whilst 30% said they use communal open grounds. However, 22% uses unofficial, while 8% use official dump sites. Based on the findings, even people who might have wanted to collect and dispose off the waste from their places got discouraged and ended up dumping it in their premises and on the road side. At least three people out of the twenty respondents, which translates into 30 percent, indicated that had the Municipal Council established a dump site, they could have been dumping waste generated from their households.

In the markets, the only initiative they could make was to dump the ever and fast accumulating waste outside the markets, while shop owners dumped it simply within their premises, for the Council never made any effort to either provide or compel them to procure dustbins. This is shown in the figure below storage medium used for waste before disposal.



As proper storage of before disposal, 55% of respondents support the use of disposal bag, while 35% are for the idea to use dust bins, 8% chose usage of poly bags and 2% think none of the above in figure 39. One respondent said that: *“We had no option but to dump the waste outside our shops because the Council neither provided dustbins nor plastic bags. At the same time, we paid taxes to the Council and as such, we expected it to collect the waste from our premises, streets and markets, while we concentrated on our business of selling our merchandise”*.



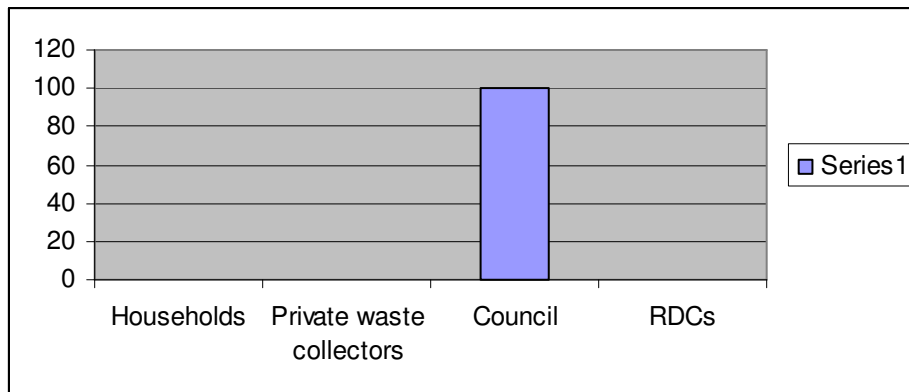
Domestic Waste generated in kabwe town

The sentiments of the respondent have been supported by a writer (<http://www.idrc.ca/en/ev,p12>) who wrote about the Tanzanian Local Government and reported that:

*“The local Government (Urban Authorities) Act of 1982 gives considerable responsibility to urban authorities for waste collection and disposal. It requires urban authorities to, among other things, “remove refuse and filth from any public or private place.” Also urban authorities are required to provide and maintain public dustbins and other receptacles for temporary deposit and collection of rubbish.”*

## EFFECTS OF SOLID WASTE ON THE ENVIRONMENT

The effects of failure to collect and dispose of waste are not only many but can equally be harmful to the environment. In Kabwe, one visible effect on the environment was that of the town and townships becoming dirty and filthy, as all sorts of waste littered the place.



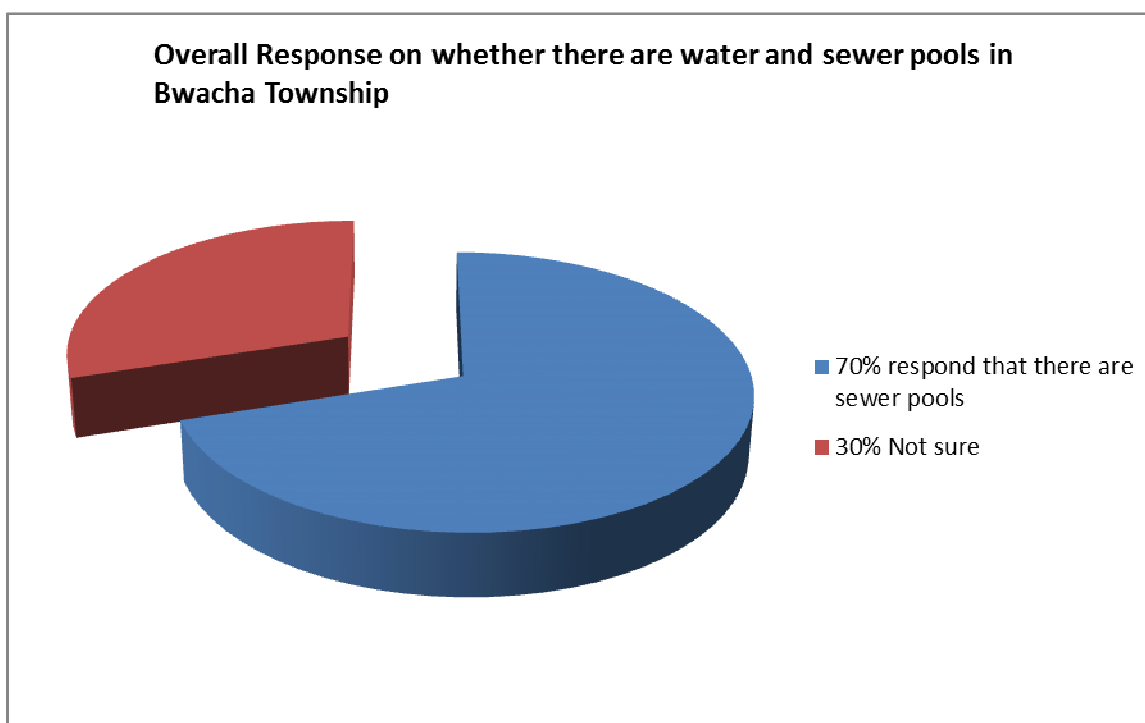
According to figure above, the overwhelming 100% of the respondents indicated that the council was solely responsible for the provision of waste disposal areas. In some places, especially where either sewer or water pipes were broken, the waste got into those pipes and blocked them.



### Pool of dirty water (Source: Survey 2011)

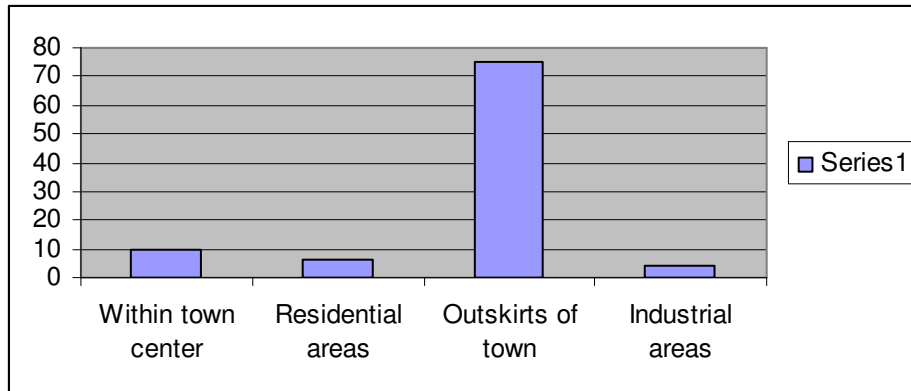
This resulted in the collection of water and thus pools were formed, particularly in Bwacha where both types of pipes were quite old, having been laid down many years ago. At least 70 percent of the people who were either interviewed or answered the questionnaire stated that water and sewer pools were common in many places of Bwacha Township as indicated in Figure below.

#### *Responses from Residents on sewer pools in Bwacha Township*



Connected to the prevalence of pools created by failure to manage the waste was the increase in the number of frogs which lived and bred in the pools. The increased number of frogs led to noise pollution, especially at night.

Another effect of uncollected waste on the environment was air pollution. From the findings of the study, the figure below where should the dumping sites be located.



Overwhelming 75% of respondents indicated that dumping sites should be located on the outskirts of town. Nevertheless, 10% of respondents favored within town center while 6% residential areas and 4% industrial areas. This came about as a result of burning the heaps of garbage by the residents. Realizing that the waste had accumulated so much in the yards, as well as on the roadsides, some residents resorted to setting the heaps alight in order to reduce the volumes of the accumulated waste. As the heaps were burning, a lot of smoke went up in the air and polluted it. As if that was not enough, from the burnt waste emanated dust and ashes which were being blown by the wind and thus contaminating the air even further. The dust and ashes, which went up in the air are toxic, meaning poisonous.

In another development, the rotting (decomposition) of the organic substances, a process which scientists normally call biodegradation, also contributed to air pollution of Kabwe. The organic matter in form of vegetables, food leftovers, leaves and slashed grass rotted, either in rubbish pits in residential yards, or on heaps on the roadside; The E.C.Z (2001:p107) asserts that:

*“Biodegradation of organic matter in these dump sites also generates toxic and hazardous gasses. Methane, one of the main components of land fill gasses, is explosive at concentrations of 5 to 15% in air”. Other gasses, such as hydrogen sulphide, are toxic.”*

From the preceding quotation, it is clear that the environment in Kabwe townships could not have experienced different effects from what other environments have experienced, while accommodating uncollected waste.

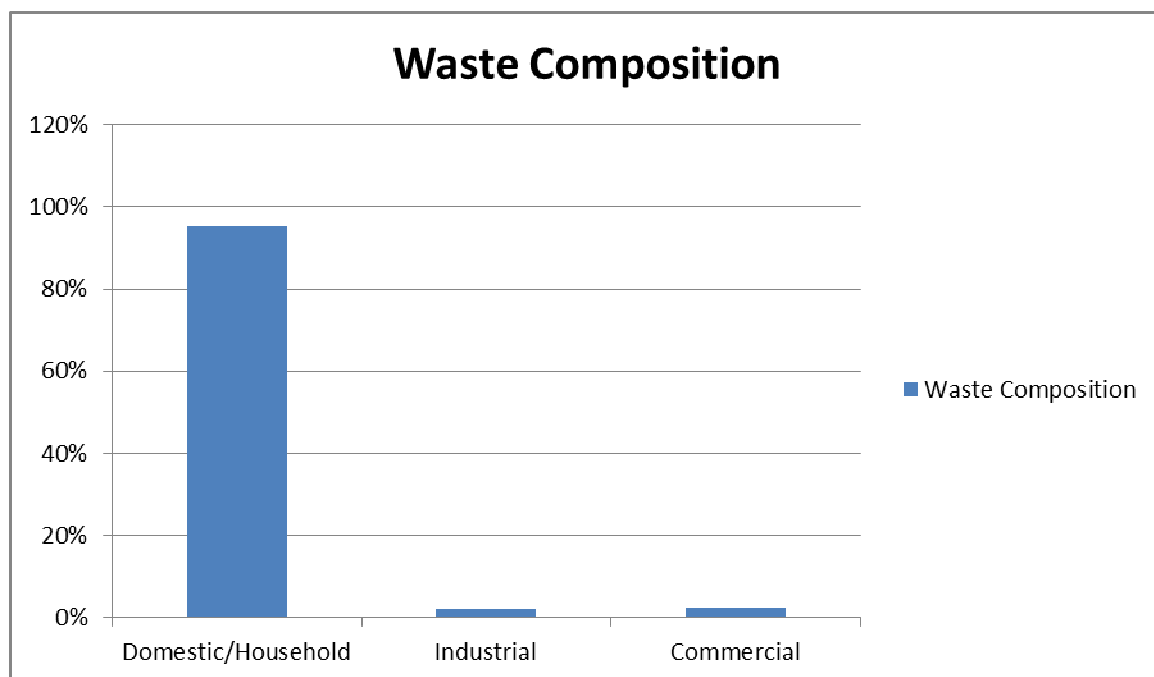
The last effect of the uncollected waste on the environment was that of soil contamination. This came about as a result of disposal of containers of different chemicals such as harmful

insecticides, agricultural pesticides, fertilizers, perfumes, handy and body lotions in the residential premises. When the chemicals came into contact with water, they percolated into the soil. And this led to soil contamination. Scientists have observed that the effects of pollution on soil are quite alarming and can cause huge disturbances in the ecological balance and health of living creatures on earth, (UjwalDeshmukh, [www.buzzle.com](http://www.buzzle.com))

E.C.Z (2001: p104) has further observed that soil pollutants would bring in alteration in the soil structure, which would lead to death of many essential organisms in it.

This chapter has outlined the categories of the waste that was generated in Kabwe and discussed the effects of the waste on the environment and the residents of the town. Thereafter, it has revealed that the waste generated in Kabwe has been categorized into domestic/household, industrial and commercial waste. Since each person generates waste ranging from 0.45 kg to 4kg, then a lot of it was produced in Kabwe as the town has had a relatively large population for years.

#### *Composition of waste*



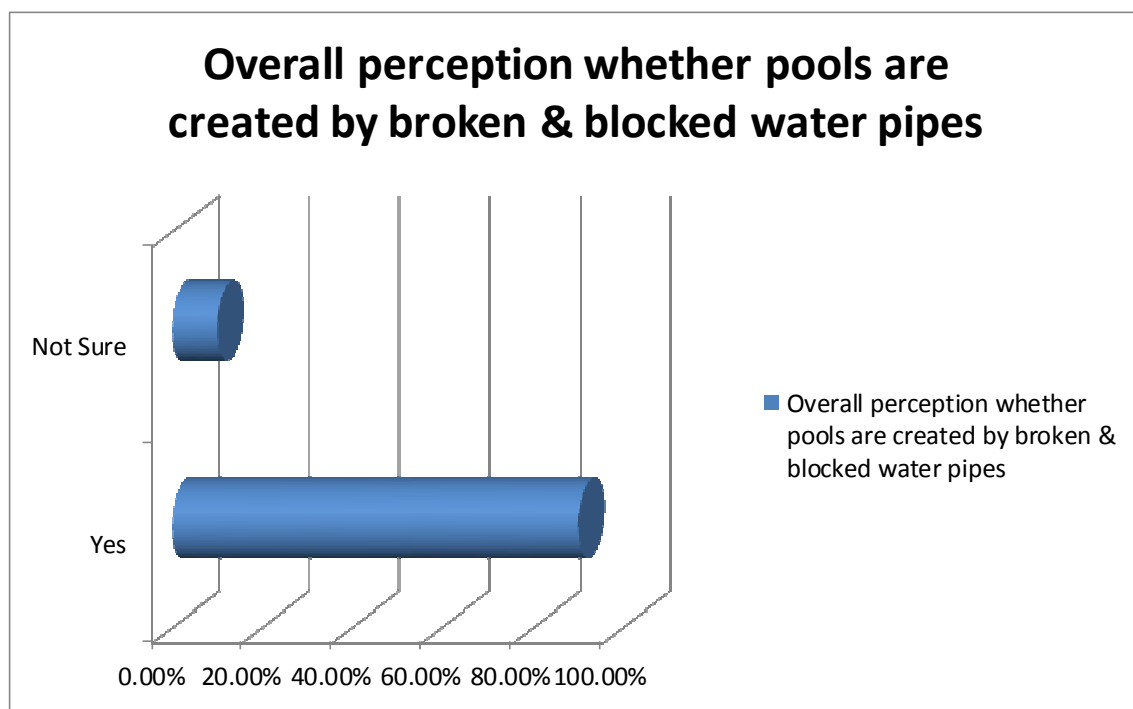
The chapter has further pointed out that the effects of the Municipal Council's failure to manage the waste on the environment were creation of a dirty and filthy environment, emergency of pools of water in various parts of the townships, air pollution and soil contamination arising from

dumped chemicals. It winds up its discussion by pointing out that the effects of the failure to manage the waste on the residents were many and on several occasions rather catastrophic. These included air pollution which caused stress and high blood pressure, fatigue, lung cancer and sleepless nights and snake bites for both residents and livestock. Others were increased malarial infections, epidemics of diarrhea, dysentery and cholera, smoke choking, coughs and economic deprivation owing to losses of livestock through snake bites.

### **EFFECTS OF SOLID WASTE ON HUMAN BEINGS**

The effects of failure to manage the waste on human beings were numerous some residents casually referred to them as disturbance to fatality. One effect of mere disturbance was caused by noise made by the frogs which had invaded the residential areas. This is called noise pollution. The frogs found water pools created by broken pipes suitable breeding grounds. Respondents, constituting 90 percent from Bwacha Township, revealed that pools which were created by water from broken and blocked pipes were breeding grounds for frogs. When the frogs multiplied in large numbers, they made so much noise that it became almost impossible to have an undisturbed sleep at night.

#### *Perception on creation of water pools*



Added to this was that the frogs moved about freely and even ended up entering people's yards, as well as houses, a thing that created great fear among many residents, particularly children

and women. The World Health Organization (WHO) considers noise pollution as a serious health problem. The organisation points out that noise pollution increases stress levels which are bound to affect execution of day to day activities. It further revealed that other effects on health included annoyance, possibility of high blood pressure and heart problems. The observations by WHO have been acknowledged by two prominent scholars on the subject of environment. Panneerslam and Ramakrishnan (2005 p 89) have pointed out that:

*“Noise can definitely damage the ear and cause temporally or permanent hearing loss depending upon the intensity and duration of sound level. At high intensity noise for continuous period, for example, a noise level of more than 90 dB for more than a few minutes, can cause reduction in the auditory sensitivity.”*

Panneerselvam and Ramaskrishnan (2005: p89-90) have also asserted that:

*“Noise pollution may cause pathological and psychological disorders. High frequencies above audible range can affect the semi-circular canals of the inner ear and nausea and dizziness. It can tense the muscles. It causes changes in diameters of blood vessels psychologically; the mildest effect is often physical and mental fatigue and lack of concentration. Noise can disturb one’s ability to hear and affect verbal communication.”*

Since the effects of noise pollution are not confined to one group of people only, it, therefore, follows that the residents of Kabwe did, as well, experience these same effects of dizziness, fatigue and high blood pressure, much as they may not be associated them with noise pollution.

Meanwhile, another form of disturbance came from rats which had increased in number, as they found heaps of waste as favourable breeding places. The many heaps of waste that lay about in the various places in the townships attracted rats and since they had plenty to eat from the heaps, they increased in number. Consequently, some of the rats got into people’s homes and established their permanent stay in the ceiling boards where they made a lot of noise that disturbed the residents’ sleep. A couple residing in Highridge on the Ben Kapufi Crescent reported that:

*“Our house was invaded by numerous rats that had come from the heaps of the waste we were dumping a cross the street. Initially, they were few but later they increased in number and then*

*got into the ceiling board where they kept on chasing one another, especially at night. Thus, they made so much noise that we hardly slept.”*

The disturbances caused to people whenever rodents such as rats invade people’s homes and increase in number have also been experienced in other parts of the world. Writing about waste disposal in America, for example, Bond and Straub observed (1973: p 179) that,

*“Inefficient and improper methods of disposal of solid wastes rebuild... and increase in rodent and insect vector and disease ... and create public nuisances, otherwise interference with community life and development.”*

From the preceding quotation, it can be clearly seen that the findings of the study that rats were a nuisance to people’s lives in Kabwe are things that have been experienced by other people in various parts of the world, other than Kabwe alone.

The presence of frogs, in due course, led to a more serious problem on the residents in the sense that the frogs also attracted snakes in the residential areas which ended up biting people, especially when it was dark. What worsened the people’s situation was the fact that the rats invaded the townships and begun to live and breed in the waste heaps in residential premises and on roadsides. And this added to the number that had already been attracted by the frogs. This, therefore, increased the frequency of snake bites. A retired clinical officer who worked in the Chowa area from the late 1970s to late 1990s stated that,

*“I attended to many people, especially children, who were bitten by snakes, as they were playing in the evenings. These incidences mainly happened between 1993 and 1999.”*

The period of snake bites given by the clinical officer falls under the period when the Municipal council began failing to collect the waste as a result of reduced funding from central government. Timanyechi Kaira who was born and bred in Bwacha Township supported the clinical officer’s sentiments but also added that apart from biting people, many chickens died of snake bites, a thing that aggravated the poverty levels of the poor. She narrated that:

*“Our widowed neighbor wept uncontrollably when she woke up to a rude shock one morning and found all her five chickens were lying dead on the ground having been bitten by a black*

*snake that was lying in the corner of her chicken run. She complained that the snake was unfair to have killed her chickens, the property she valued so much."*

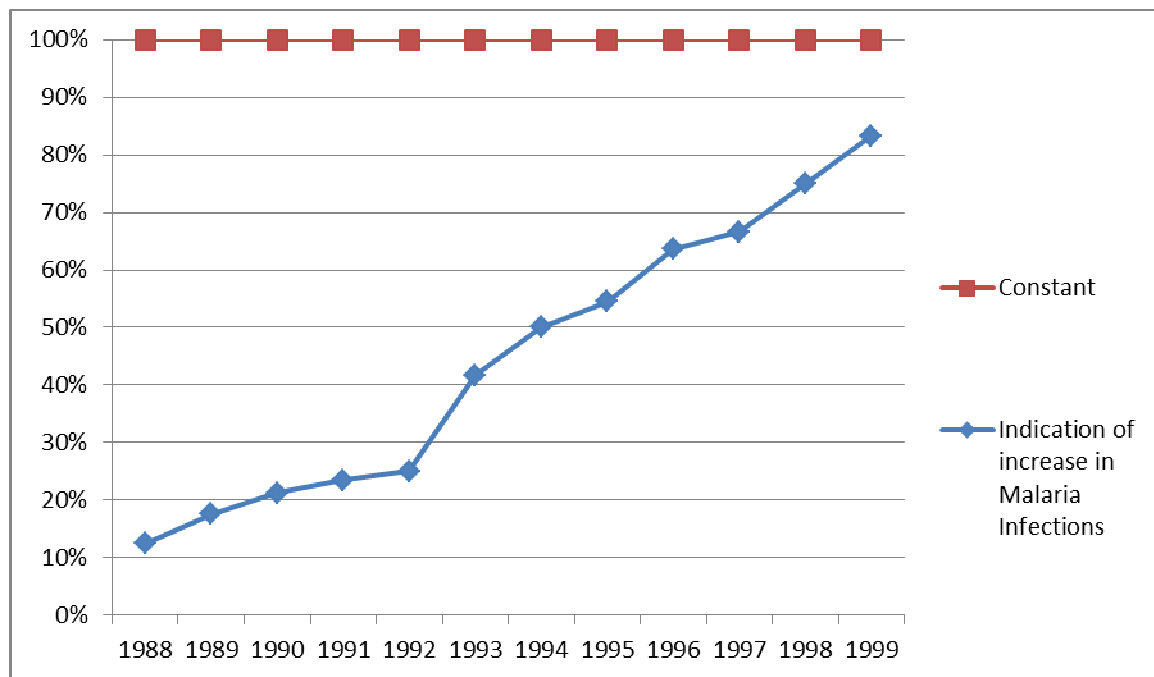
The sentiments by the clinical officer and those of Timanyechi show clearly the manner and extent to which the failure to collect the waste affected the residents of townships in Kabwe.

Another and more serious effect of failure to manage the waste on humans was in form of diseases which the residents of Kabwe contracted. One such disease was malaria, which became prevalent in townships of Kabwe owing to the increase in malarial carrying mosquitoes. This was so because the pools of water caused by the blockage of sewer and water pipes became breeding grounds for the mosquitoes. Interviewees in Highridge Township whose houses are situated on the Kacholola, Mpulungu, Chisokone and Petauke streets and those from Bwacha and chowa said that many people suffered from malaria in their townships. They added that:

*"It was worse for pregnant women, children under five and those infected with the HIV virus whose immunity was already weak. In fact, a number of them passed away. What worsened the situation was the fact that at that time even the initiative of roll back malaria that has led to the distribution of mosquito nets on a large scale never existed. Hence, many poor people lacked mosquito nets and mosquitoes bit them without any thing to hinder them."*

A confidential document, not allowed to cite by the Researcher, revealed that there was an increase in malarial infections during all the seasons of the period under discussion. The paper attributed the prevalent of malaria infections to pools of water created by the blockage of drainages caused by the accumulation of the waste in the drainages. The statistics of the sampled malarial infections for the years 1993, 1995, 1996, 1997 and 1999 all indicate that there were more malarial infections during the 1990s compared to the period before that time.

*Indication of increase in malaria cases in the 1990s*

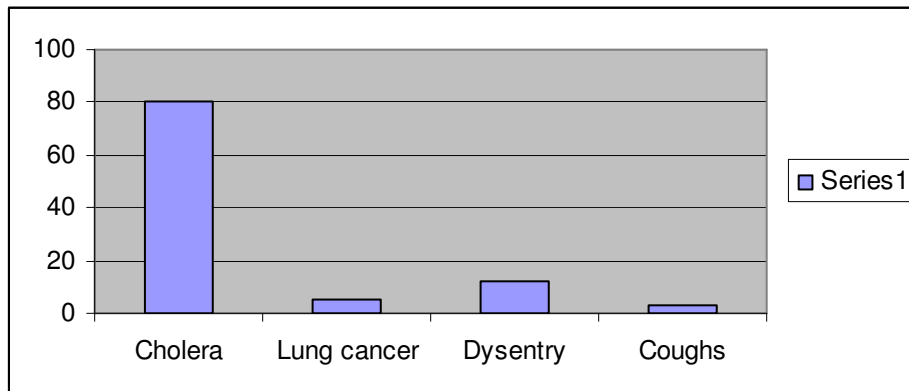


Furthermore, failure to manage the waste was responsible for the outbreaks of epidemics which occurred in Kabwe between 1994 and 2009. Hellen Mbulo who has lived in Bwacha from 1975 up to date indicated that,

*“The worst of all the outbreaks occurred in 1998 and 2004. This was so because so many people contracted the disease. This compelled the government to close the schools, especially those in the Bwacha Township and temporarily turned them into cholera treatment centres. In fact, apart from hearing that many people had died, we also noted that a number of people whom we previously used to live with could not be seen any more at the end of the epidemics.”*

The respondents' observation about the outbreaks of cholera in various places owing to failure to manage the waste has also been confirmed by the ECZ (2001: p104) an organization tasked to regulate the management of the waste in the country. It stated that, “... uncollected waste has become a major concern for the responsible authorities, as this has caused several outbreaks of cholera and other diseases....” Besides, the medical authorities in the district are also in support of the findings of the research work. The records obtained from Kabwe District Health Management Board (KDHMB) have shown that there were outbreaks of cholera in the aforementioned period and that all of them were caused by the filth which was attributed to the failure to collect the waste by the Municipal Council, (KDHMB, Annual reports for the period 1994 to

2009). In the study as shown below the disease that has high degree of occurrence in waste contaminated area.



Overwhelming 80% of the respondents revealed cholera, 12% indicated dysentery, 5% noted lung cancer and 3% simply said coughs. Other diseases which have been attributed to failure to manage the waste were diarrhea and dysentery. This was so because filth from the waste, as well as sewer effluents, seeped into the broken water pipes and contaminated the drinking water. People begun to purge once they drank this water.

At least 16 respondents from both Bwacha and Highridge which translate into 80 % narrated how many people so often contracted either of these two waterborne diseases in the period between 1994 and 2009.

The findings of this paper have been confirmed by the Annual Reports of KDHMB for the very years. These reports revealed that many people suffered from the two water-borne diseases during the period under discussion.

Furthermore, residents of Kabwe were also affected by air pollution that took place in the townships. Smoke bellowing from burning waste went into the air and contaminated it. A.V. Bridwater and C.J. Mumford describe (1979: p72) smoke as, “airborne particles resulting from the incomplete combustion of carbonaceous materials and include soot, ash, grit and gritty substances emitted in smoke.”

Many people who inhaled the contaminated air suffered from coughs. The situation was worse for children and the aged who developed all sorts of coughs. However, some people simply got choked. A resident of Highridge residing in a house that is on the Sahara Street said that

choking of residents caused by burning heaps dumped on roadside was frequent and sometimes proved to be fatal. She narrated a sad ordeal of how her asthmatic grandfather passed away on the night of the 20<sup>th</sup> September, 1999 due to the asthma that was induced by the thick smoke that came from a heap of burning waste. She stated that:

*“On the material day, we had spent a peaceful and joyous moment with our grandfather. He had narrated a number of stories about various events until we separated around 21:00 hours as we went to sleep. However, around 22:00 hours our house was engulfed in thick smoke from a burning heap of waste across the road. The smoke affected our grandfather so much that he got choked. The choking he had experienced triggered asthma almost instantly and thus aggravating the problem of breathing further. He fell on the ground and began gasping for air. We tried to resuscitate him but failed. Even our effort to rush him to hospital could not yield any positive result for he died on the way. “*

The death of the respondent's grandfather, arising from air pollution cannot be an event peculiar to Kabwe Town alone but something that has occurred even in other places as well. This is in fact, confirmed by Pannerselvam and Ramakrishnan (2005: p 660 who in their discussion of the effects of air pollution noted that, “Smoke and flames can increase the amount of atmospheric turbidity and reduce the amount of sunlight reaching the earth's surface.” And this creates problems of breathing in human beings. The two have further revealed the devastating effects of air pollution, which have occurred in a number of countries. They noted that:

*“The first case of severe pollution in modern times was in the Meuse Valley of Belgium in 1930: the deadlier smog which lasted for five days in London in 1952 resulted in the death of 4,000 to 5,000 people due to respiratory failure; there was a massive hood of stagnant air stretching from Chicago and Milwaukee to New Orleans in the South and Philadelphia in the east which created dangerous air pollution; Pannerselvam and Ramakrishnan,(2005: p66).”*

Panneerselvam and Ramakrishnan (2005: p72) have also shown that air pollution, in particular the severe one, affects human health and causes many fatal diseases. For instance, workers of occupational hazards such as coal miners and pipe fitters suffer from lung diseases. Furthermore, air pollutants have been found to be responsible for causing diseases such as emphysema, chronic bronchitis and lung cancer which is prominent in city dwellers.

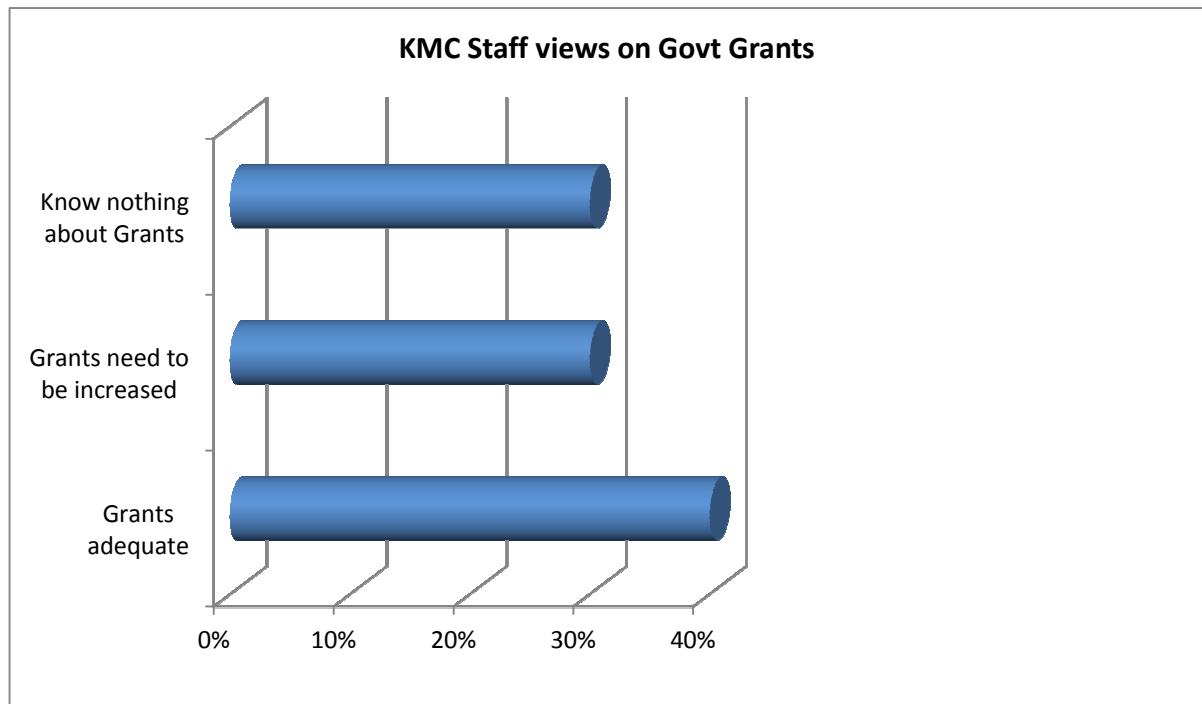
This might explain why the disease of cancer, which previously was unknown in our country, has of late become a major problem attracting a lot of attention.

The last effect of failure to manage the waste on humans was in form of the bad smell they were subjected to. This smell came mainly from two sources. These were the decomposing organic substances and the sewer effluents. As the organic substances decomposed, they gave out an unpleasant smell, which caused discomfort among the residents. Meanwhile, the sewer effluent also gave out a terrible smell, which equally troubled the residents. What worsened the situation was the fact that the Council would let the broken sewer pipes go on discharging the effluents without being attended to for a long period of time. And residents would stay in agony of inhaling repugnant air for all that period the sewer pipes would remain unattended to. At least 80% of the respondents from the two townships said that they were made to inhale bad air for most of the time. Air pollution emanating from decomposing waste and sewer effluents has been experienced in other places other than Kabwe alone. John Green and Amihud Kramer (1979: p82) have noted that, "in some situations, sulfur compounds contribute to odor problems."

## RESOURCING TOWARDS WASTE MANAGEMENT

The findings reveal that 40% of interviewees out of every ten (10), felt that the resources central government allocated to local authorities, though reduced now, were adequate to cater for the management of solid waste. 30% out of ten felt that central government should increase the funds if services are to be adequately delivered. 30% out of ten interviewees knew nothing about the grants.

### *KMC Response on Central Govt Grants*



Although the researcher was not privy to the actual amounts of funds that central government disburses to local authorities annually, the affirmation by the form interviewees from KMC staff indicated that the resources allocated to councils for service delivery were adequate, thereby making it reliable to conclude that grants are disbursed to councils. The Director of Planning at KMC indicated that:

*“Grants that are disbursed to councils for service delivery, Inclusive of solid waste management are enough except Councils divert these finds for personnel emoluments.”*

On the whole, 40% of KMC staff confirmed that government disburses grants to councils, although the figure has been reduced from what was disbursed up to 1992. However, the staff

still felt the reduced funding was able to service the solid waste management service delivery, if only the local authority management did not misapply the grants to payments of staff salaries and wages.

Given such a scenario, it is in order to conclude that the central government has reduced its grants to local authorities. However, since 40% of interviewed staff at KMC argued that the reduction could not have any significant effect on the solid waste management service delivery, the council would still carry out their solid waste management effectively, if only the reduced grants were not misapplied.

## **CHAPTER FIVE**

### **RECOMMENDATIONS AND CONCLUSION**

Chapter Five suggests recommendations for improving Kabwe Municipal Council performance in improving the environment in the area under its jurisdiction. Based on the findings of the study, the following measures are recommended for efficient and effective management of solid waste in kabwe. These are discussed below.

#### **Recommendations**

The thesis of the study is that the Central Government's policy to reduce grants to Local Authorities which came about as a result of the wish to meet the aid conditionality's of the Brent-Wood institutions, had negative impact on solid waste management, a thing that triggered severe consequences on the environment and residents of Kabwe Town. As a result, the study recommends the following;

- The Central Government should revisit the Brent-Wood conditionalities on which the Policy of reducing grants to Local Government institutions was based. This is so because the implementation of such conditionality did not only compel the Central Government to, in some cases; reduce the grants to local authorities but also to completely withdraw in other cases. One such a service the Central Government had completely withdrawn to provide grants for was solid waste management. The study supports this recommendation because it is a world-wide practice for the central governments to provide grants to local authorities to enable them provide services to the residents in their localities.
- The central government must, where possible, ensure that councils go into partnership with private organizations in waste management or on their own come up with such kind of initiative. This is not a new phenomenon but a world-wide practice. Within Zambia, there are already some Councils that are using this method, in particular the ones running city and municipal councils.
- They can also initiate formation of Community Based Organisations (CBOs) such as Residential Development Committees (RDCs) to manage the waste. This would involve demarcation of the townships into smaller areas consisting of a number of houses per residential area. RDCs can agree on how to manage the waste in their areas or how to mobilize resources to pay whoever they can engage to collect and dispose off the waste on their behalf. Meanwhile, the council's health department can simply be checking on the progress and provide advice. In addition, the council can involve both the local and the

international Non Governmental organizations, hereafter (NGOs) in waste management. NGOs have the capacity to mobilize resources from donors and are flexible in their operations. Their added advantage is that they are closer to communities. These attributes make it easier for them to succeed where governments may face problems. Already, within Zambia, the Lusaka City Council is using this strategy. Outlining the various strategies, the Lusaka City Council has implored to manage the waste, ECZ (2001:p105-6) reports that, NGOs like CARE International, Associations such as Zambia Waste Management Association (ZWMA), Sustainable Lusaka Programme, donor agencies such as NORAD, Irish Aid, USAID and others and Private companies like Cleanfast and Schweitzer have been brought on board and they are making a positive contribution. This same method has been tried in Tanzania by the Dares salaam City Council.

- The other method the council could use seriously is that of educating the residents about the importance of managing the waste and the dangers of failure to manage it. Education should not be a one day's activity but an on-going one. It should also take different forms such as talks to residents during organized fora in form of meetings, church gatherings and school assemblies. Drama or sketch performances can, as well, be organized, specifically carrying messages about waste management. The council can equally use posters to educate residents about waste management. The posters can be in both English and the local languages. However, for this to produce desired results, the Health Department of the council should be re-organised to include education section to be run by a full time expert with a sizeable number of staff to plan and carry out educational activities.
- Councils should come up with a by-law to compel manufacturers and business houses to ensure that their products do not at any stage of their life time become waste. Waste management concepts outlined by the internet ([http://en.wikipedia.org/wiki/waste management](http://en.wikipedia.org/wiki/waste_management)) notes that, one of the methods used in different parts of the country to manage the waste is called Extended Producer Responsibility (EPR).

*“Extended producer responsibility is a strategy designed to promote the integration of all costs associated with products throughout their life cycle (including end-of- life disposal costs) into the market price of the product. Extended producer responsibility is meant to impose accountability over the entire life cycle of products after their useful life as well as during manufacture.”*

- Waste management tax should be introduced for all people and organisations involved in all types of commercial activities. This would help the councils to raise funds to use in waste management and such funds must have a separate account to ensure accountability and transparency. Related to this is the need to impose stiffer penalties on manufacturers and business houses which violate waste management regulations. This recommendation is supported by one of the three concepts about waste management, which recommended a policy called polluter pays principle. The Wikipedia Encyclopedia ([http://en.Wikipedia.org/wiki/waste management](http://en.Wikipedia.org/wiki/waste%20management)) states that, “The polluter pays principle is a principle where the polluting party pays for the impact caused to the environment.” This study’s recommendation is that compensation should not be confined to the environment alone but to individuals affected by such waste pollution.
- Local authorities should come up with a by-law to make it an obligation for traders at markets to collect the waste they generate. This is done in a number of countries, which include the neighbouring ones. Dar es salaam Internal Development Research (2013:p17) reveals that:

*“Traders at some markets collect money to hire waste-collecting vehicles. For example, traders at Buguruni market formed a co-operative (WauzaMazaoBuruguni Co-operative Society). These people operate a fund they collect from themselves, which they use to hire vehicles, including those of the DCC, to collect market waste. This can easily be done by traders at big markets such as the Kabwe Town Centre and the Green Markets in Kabwe, the City Market in Lusaka and Chisokone Market in Kitwe, as well as other big markets in various towns in the country.”*

- The central government should make it mandatory for every local authority to have a waste disposal site and drastic measures be meted out on all chief executive officers of local authorities who fail to adhere to the policy. This would enjoin municipalities, which have taken waste management lightly, such as Kabwe, to set up dump sites. And within towns, local authorities can set aside places where people can dump the waste and later the local authority can collect it and dump it at the designated dump site. The Dar es salaam International Development Research (2013:p17)reports that:

*“In some parts of the city, as in the drive-in area, the DCC has set aside a place where waste can be dumped. Waste is collected from generators by the various means, including hand charts. At the dump, the DCC has stationed a skip and two employees,*

*who put together the waste .... Occasionally, the DCC collects the skip and the waste that may have accumulated around it.”*

*The quotation above shows how important it is to have a dump site in waste management.*

- Local Authorities should also introduce micro-level waste management method. This requires residents' participation in waste management by way of digging rubbish pits within their yards where degradable materials should be dumped and later buried. Materials such as leaves from trees and grass growing in yards, as well as rotting vegetables, could be dumped in rubbish pits. This same method has been identified as one of the possible ways of managing the waste. A document obtained from internet (file//C: Methods for Solid Waste Disposal) states that:

*“Ideally, everyone should create a compost with a yard waste like leaves and branches, according to the Environmental Protection Agency. ...Instead of throwing out yard trimmings, using them as compost replenishes soil and reduces the need to pay for land reclamation.”*

The preceding quotation clearly reveals that collection of certain types of waste and later burying them is a method that is encouraged by bodies dealing with waste management. In fact, all that is required is for the local authorities to ensure that every household has a rubbish pit where the gradable waste could be dumped and after they have accumulated, they should be buried. The Health Department of each council could carry out this function.

### **Conclusion**

The study has established that the Central Government's decision to reduce grants to local authorities disabled them economically. Consequently, they had no means to manage the waste in their townships. Additionally, the other measures, which the government imposed on local authorities such as selling of all council houses and directing them to withdraw from the provision of income generating ventures like water supply to residents aggravated the local authorities' already precarious economic situation. This resulted in the local authorities' failure to manage the waste in the townships under their jurisdiction. The failure, in turn, led to emergency of dirty and filthy environment and its subsequent pollution.

The study has revealed that solid waste management planning and operations is given a very low priority in developing countries, except in capital and large cities; Ogawa (2005). As a result very limited funds are provided to the solid waste management sector by the government and

the levels of services required for protection of public health environment which the citizens require is not attained. The problem is acute at the local government level, where the local taxation system is inadequately developed and therefore the financial basis for public services, including solid waste management is weak, as the case is for Kabwe Municipal Council. Furthermore, the study summarises the challenges of solid waste management in kabwe as follows; inadequate operation funds to support sold waste management activities, inadequate dumping sites resulting into air pollution and spread of diseases, which implies that people generally have a negative attitude towards the environment hence the outbreak of communicable diseases.

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Dear Respondent,

I am **Mando Mumbi-Pasi**, a *post-graduate student* at the **University of Zambia**. I am conducting a study to enable me to partially fulfill the requirements of the **Degree of Master of Public Administration [MPA]**.

You have been selected, and I would be most grateful if you would kindly spare a few minutes to answer a few questions. This is a study on ***The Impact of Reduced Central Government Grant on Solid Waste Management***. All information that you offer will be kept strictly confidential. It is exclusively for use of the ***MPA dissertation***. However, you have the right to withdraw from the study, without stating the reasons for withdrawing.

I encourage you to be as frank as possible in answering the questions.

Respondent's Signature.....

Researcher's Signature.....

## **RESEARCH QUESTIONS:**

*An Evaluation on the impact of reduction of central government grants on Solid Waste Management: The case of Kabwe Municipal Council.*

## **Section A (Demographic Information)**

Tick what is applicable

1. Sex                      male ☐                      female ☐
2. What is your marital status?
- a. single
  - b. married
3. How old are you?
- a. 20 - 30years
  - b. 30 - 40years
  - c. 40 - 50years
  - d. 50 years and above
4. What is the size of your family?
- a. 0 - 4
  - b. 4 - 8
  - c. 8 and above
5. What is your educational background?
- a. certificate level
  - b. Diploma level
  - c. degree level
  - d. others (specify)-----
6. Area of operation.
- a. Residential
  - b. Commercial
  - c. Industrial
7. How long have you lived in Kabwe?
- a. 0 – 5years
  - b. 5 – 10years

- c. 10 – 15years
  - d. 15years above
- 8. Are you in employment?
  - a. Yes
  - b. No

If yes, what type of employment?

  - a. Local government
  - b. Private sector
  - c. Industrial sector
  - d. Commercial sector

## **Section B (Solid waste management)**

- 1. Indicate what category of type waste you produce?
  - a. Domestic
  - b. Industrial
  - c. Commercial
  - d. All of the above
- 2. How do you dispose of solid waste?

- a. Unofficial dump site
  - b. Official dump site
  - c. Backyard
  - d. Open grounds
3. How many times should waste be disposed of?
- a. Weekly
  - b. Monthly
  - c. Daily
  - d. Twice a week
4. Who should provide disposal of waste areas?
- a. Households
  - b. Private companies
  - c. Council
  - d. Business houses
5. Where should the location of dumping sites be?
- a. Within town centre
  - b. Residential areas
  - c. Outskirts of town
  - d. Industrial areas
6. Whose responsibility is it to collect waste?
- a. Individuals
  - b. Council
  - c. Private sector
  - d. Communities
7. Who should contribute toward the collection of garbage?
- a. Government
  - b. Waste producers

- c. Council
  - d. All above
8. How can you contribute towards waste collection?
- a. User fees
  - b. Usage of disposal sites
  - c. Formation of community based organisation
  - d. Support of educational foras
9. Should producers be compelled to manage waste?
- a. yes
  - b. no
- If yes, by what means?
- a. By laws
  - b. Public health authorities
  - c. Community leaders
  - d. All of the above
10. Does waste affect people?
- a. yes
  - b. no
- If yes, how?
- a. Breeding ground for epidemics
  - b. Unpleasant sight
  - c. Insecurity
  - d. Environmental pollution
11. Does waste affect the environment?
- a. yes
  - b. no

If yes, how?

- a. Air pollution
  - b. Soil contamination
  - c. Drainage blockage
  - d. Disturbs ecosystem
12. What diseases are common in waste contaminated area?
- a. Cholera
  - b. Lung cancer
  - c. Dysentery
  - d. Coughs
13. Who should facilitate the disposal of waste?
- a. Waste producers
  - b. Council
  - c. Private companies
  - d. RDCs
14. What should be used to store waste before disposal?
- a. Dust bins
  - b. Disposal plastics
  - c. Poly sacks
  - d. none
15. What mode of transportation is suitable dispose waste at dump sites?
- a. Open vans
  - b. Refuse trucks
  - c. Tractors
  - d. Others

**END OF INTERVIEW THANK YOU FOR YOUR TIME.**

**Research Questions:**

*An Evaluation of the Impact on Reduction of Central Government Grants on Solid Waste Management: The case of Kabwe Municipal Council.*

**Questions for Residents**

Tick what is applicable

1. Sex                                      female ☐                                      male ☐
2. Residential Area.....
3. How old are you?
  - a. 20 - 30years
  - b. 30 - 40years
  - c. 40 - 50years
  - d. 50years and above
4. What is your Educational background?
  - a. certificate level
  - b. Diploma level

- c. degree level
  - d. others (specify).....
5. How long have you lived in the area?
- a. 0 – 1year
  - b. 2 – 5years
  - c. 6 – 10years
  - d. 10years above
6. Are you in employment?
- a. Yes
  - b. No
- If yes, what type of employment?
- a. Formal
  - b. Informal
  - c. Unemployed
7. Do you contribute anything towards garbage collection?
- a. Yes
  - b. No
- If yes, what is the amount you contribute towards this service?
- a. K1,000 – K10,000
  - b. K11,000 – K20,000
  - c. K21,000 – K30,000
  - d. K31,000 – K40,000
  - e. K40,000 above
8. Name the organization that collects cabbage in your area?
- .....
9. How many times is garbage collected from your area?

- a. Weekly
  - b. Monthly
  - c. Annually
  - d. Not at all
10. Are you happy / satisfied with the services offered by the organization?
- a. Yes
  - b. No
  - c. Others [specify].....
11. Can you suggest how best garbage collection in your area can be improved?  
Please use the space as provided below.

.....

.....

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**END OF INTERVIEW THANK YOU FOR YOUR TIME.**

## QUESTIONNAIRE FOR COUNCILLORS

*This questionnaire is purely for academic purposes. All the information obtained from it will be treated with strict confidentiality. It would, therefore, be kind of you to answer all the questions as honestly as possible by either ticking in a box or writing in the space provided.*

Tick where applicable

1. Sex                                      female ☐                                      male ☐
2. Which Ward do you belong to:.....
3. Which organisation collects garbage in your area?.....
4. Are you satisfied / happy with the service offered?
  - a. Yes
  - b. NoIf, No, why not?  
.....  
.....
5. How many times is garbage collected in your area?
  - a. Weekly

- b. Monthly
- c. Annually
- d. Not at all

6. Who was collecting garbage before the current organization began: ?.....

7. How was the service then?

- a. Good
- b. Fair
- c. Bad
- d. Never there

8. Who pays for the garbage collection?

- a. Residents
- b. Council
- c. Government
- d. Others.....

## QUESTIONNAIRE FOR COUNCIL NON MANAGEMENT STAFF

*This questionnaire is purely for academic purposes. All the information obtained from it will be treated with strict confidentiality. It would, therefore, be kind of you to answer all the questions as honestly as possible by either ticking in a box or writing in the space provided.*

Tick where applicable.

1. Sex male ☐ female ☐
2. How old are you?
  - a. 19 - 29years
  - b. 29 - 39years
  - c. 39 - 49years
  - d. 49 and above
3. How long have you worked for kabwe municipal council?  
.....
4. Under which department do you operate?
  - a. Public Health
  - b. Engineering
  - c. Finance
5. Are you involved in garbage collection?
  - a. Yes
  - b. No

If yes, for how long have you been involved in garbage collection

.....

6. How was garbage collection managed in the 2<sup>nd</sup> Republic?
  - a. Collected by Council
  - b. Contracted out
  - c. Not collected
  - d. Others .....
7. How is it managed in the 3<sup>rd</sup> Republic?
  - a. Collected by Council
  - b. Contracted out
  - c. Not collected
  - d. Others.....
8. What type of transport do you use for garbage collection / is used?
  - a. Tipper Truck
  - b. Tractor
  - c. Others [other specify].....
9. How adequate is transport used for garbage collection (to go round the Municipality)?
  - a. Very adequate
  - b. Adequate
  - c. Inadequate
  - d. Very inadequate

10. Can you suggest ways of how best garbage collection can be improved as a service? Please elaborate in the space provided below.

.....

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.....

11. Are you provided with adequate protective clothing materials when carrying out the job?

a. Yes

b. No

If yes, what type?

.....

.....

If not, what impact has this on your work or duties:

.....

.....

.....

12. Are you normally provided with extra pay for working in the Public Health section?

a. Yes

b. No

If yes, is this equal with your daily tasks of garbage collection?

- a. Yes
- b. No

**END OF INTERVIEW THANK YOU FOR YOUR TIME.**

Tick what is applicable

1. Sex                      male ☐                      female ☐

2. Position of Respondent:
- .....

3. How long have you worked for the council at management level?
- .....

4. What is Government Policy on Financing of service delivery through Local Authorities?
- .....
- .....
- .....
- .....

5. Has this policy over the years changed (or been changed)?
- .....
- .....

6. Does the Central Government through the Ministry of Local Government and Housing, provide funding for Solid Waste Management to Councils?

- Yes
- No

If yes, how does government provide funds to Kabwe Municipal Council, specifically for garbage collection?

- a. Monthly
- b. Quarterly
- c. Annually
- d. Not at all

7. Does the MLGH provide transport for Solid Waste Management to Councils as well?

- a. Yes
- b. No

If yes, how often?

.....

8. What mechanisms has the KMC put in place to monitor proper utilization of funds and transport for Councils meant for garbage collection or service delivery?

.....  
 .....  
 .....

9. How effective is the monitoring mechanism?

.....  
 .....

**END OF INTERVIEW THANK YOU FOR YOUR TIME.**

**INTERVIEW QUESTIONS FOR THE MAYOR AND DEPUTY MAYOR.**

1. How long have been an elected member of KMC?

.....

2. How has been Central Government funding to the Council in terms of service delivery?

.....

3. How much does the Council receive annually as grants for service delivery?

.....

4. How much do you allocate to service delivery particularly, Solid Waste Management or Garbage collection?

.....

5. Over the years, has government reduced / increased its grants towards service delivery?

.....

6. What has been the impact of the increase / reduction on garbage collection?

.....

.....

.....

.....

.....

.....

.....

7. What is government policy on financing of Local authorities?

.....

.....

.....

8. How has this change in policy affected the operation of the council in terms of service delivery and cabbage collection in particular?

.....

.....

.....

.....  
.....

9. How much does the Council spend monthly in terms of providing the service / garbage collection?

.....

10. Has the Council contracted or outsourced services / garbage collection?
- a. yes
  - b. no

If yes, What (necessitated this)?

.....  
.....

11. How is the performance of the service after having been contracted out, from the point of view of the Council?

.....  
.....

**END OF INTERVIEW THANK YOU FOR YOUR TIME.**