THE ROLE AND EFFECTIVENESS OF PRIVATE SECTOR COMPANIES IN SOLID WASTE MANAGEMENT IN LUSAKA, ZAMBIA

BY

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Copyright Declaration

Declaration

I, **Mutinta Nakauma Diangamo** declare that this dissertation titled **"The Role and Effectiveness of Private Companies in Solid Waste Management in Lusaka, Zambia"** was written by me under the supervision of Dr. Nawa Shalala- Mwale and Dr. Simon Manda. The information derived from this literature has been duly acknowledged in the text and a list of references provided. It has not been previously submitted for a Degree at this or any other University.

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This dissertation of Mutinta Nakauma Diangamo has been approved as fulfilling part of the requirements for the award of the Degree of Master of Arts in Development Studies by the University of Zambia.

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Abstract

This study explored the role and effectiveness of private companies in Solid Waste Management (SWM) in Lusaka, Zambia. Drawing from two private companies – Acka Foods and Twincare – operating in medium density residential areas of Chilenje and Chelstone. The objectives of this qualitative study were to: examine policy and legal guidelines promoting private sector participation in SWM in Zambia; examine management practices of the companies in the management of solid waste; determine the role of other key stakeholders in SWM in the operation areas; and analyse challenges faced by private companies in the management of solid waste in Lusaka city. A case study research design was employed and respondents were mainly selected based on purposive sampling. Twelve (12) key informant interviews were conducted with staff from Acka Foods Company, Twincare Company, Lusaka City Council (LCC) and Zambia Environmental Management Agency (ZEMA). A total of twenty (20) questionnaires were administered to households; 10 households in Chilenje and 10 households in Chelstone residential areas. Data was analyzed qualitatively through the thematic approach where written or spoken information was converted into data that could be analysed and interpreted. It was noted during data collection that there was inadequate enforcement of policy guidelines promoting private sector participation in SWM as some households did not have knowledge of these private companies in their areas hence low participation in SWM. Results revealed that companies collected waste weekly but not on specific days. The quantities of waste collected and deposited at the designated dumpsite in Chunga was fluctuating but generally low. Further, the study revealed that the LCC and ZEMA whose roles among others include monitoring of private companies and Waste Management Districts, conducted monitoring inspections quarterly and not on a daily basis as per the Local Government (Solid Waste Management) Regulations, 2011. Furthermore, the study revealed that some of the challenges faced by private companies in SWM were financial constraints, inadequate vehicles, low levels of compliance to pay by households and inadequate enforcement of SWM laws. In conclusion, this study revealed that private sector participation in SWM in Zambia remained low and less effective. Private sector participation in SWM and its effectiveness had been affected by diverse factors – internally and externally. Internally, private companies lacked appropriate machinery for solid waste collection such as compactors, skip trucks and tipper trucks as per policy requirement. External factors included poor client compliance in paying service fees which affected the revenue base for the companies hence companies could not procure and repair equipment/machinery. Some of the consequences had been infrequent and limited collection of waste by private companies. Therefore, the study recommends that Government should also improve the capacity of the local councils and ZEMA in the area of finances, equipment and manpower as well as providing incentives such as reduction import tax for SWM vehicles. Robust awareness should be created by Government on the need to continually use the services of private companies and on the existing laws on waste management in order to ensure adherence from citizens and to avoid the high rate of waste generation.

Keywords: e*ffectiveness, Lusaka, private companies, solid waste management, Zambia*

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List of Abbreviations and Acronyms

CBD	Central Business District
CBEs	Community Based Enterprises
CBOs	Community-Based Organisations
CSO	Central Statistical Office
ECZ	Environmental Council of Zambia
ILO	International Labour Organisation
LCC	Lusaka City Council
NGOs	Non-Governmental Organisations
PPP	Public-Private Partnerships
SWM	Solid Waste Management
WMD	Waste Management District
WMU	Waste Management Unit
ZDA	Zambia Development Agency
ZEMA	Zambia Environmental Management Agency

CHAPTER ONE: INTRODUCTION

1.1 Introduction

Waste generation continues to increase world-wide following growth in consumption. With the increase in population and urbanization, waste generation in developing countries is also increasing rapidly which pose a challenge for the municipal authorities to deal with waste management hence poor waste management in the cities. According to the World Bank (2018), in 2016, the worlds' cities generated 2.01 billion tonnes of solid waste and with rapid population growth and urbanization, annual waste generation is expected to increase by 70 percent from 2016 levels to 3.40 billion tonnes in 2050. Waste generation in Africa, particularly, Sub-Saharan Africa is approximately 62 million tonnes per year (World Bank, 2018). Due to rapid population growth and urbanisation, cities have seen the growth of unplanned settlements and consequently, put a strain on governments and municipal authorities to deliver basic services to the public such as municipal services particularly Solid Waste Management (SWM). This situation is further worsened by the lack of capacity in many developing countries in terms of human and fiscal resources to provide the people with infrastructure and SWM services (Chulu, 2017). The provision of SWM services had previously been the sole responsibility of the central governments but due to the costs involved and the high rate of waste generation, local authorities have practically been forced to engage the private sector (Oteng, 2009). This lack of capacity by local authorities has made it important to explore alternatives such as public-private partnerships approach to waste management. A Public-Private Partnership (PPP) refers to the collaboration between the public sector (government and/or its agencies) and the private sector (profit-driven individuals or corporate entities) to share benefits and risks in undertaking specific projects (ZDA, 2014).

Therefore, environment sustainability has emerged as a global issue, with emphasis being placed on SWM among other pressing environmental issues (Zhu, 2008). This has led to countries around the world including Zambia to place importance on SWM by adopting international conventions such as the Basel and Bamako Conventions in 1989 and 1991 respectively (Environmental Council of Zambia, 2004:3). The Basel

Convention aims to address the global problem of uncontrolled movement and dumping of hazardous wastes, including illegal dumping in developing countries by companies from developed countries. This was of great concern as indiscriminate disposal or inappropriate management of hazardous waste and other wastes could pose severe health problems, even death and could lead to land, air and water pollution. The Bamako Convention is the convention on the ban of the import into Africa and control of transboundary movements and management of hazardous wastes within Africa (Ibid, 2004:3). Therefore, the main aim of the Conventions is to protect human health and the environment against the adverse effects' resultant from the generation, management, trans- boundary movements and disposal of hazardous and other wastes. Later, in 2002, at the World Summit on Sustainable Development, governments called for priority to be given to waste prevention and minimization, reuse and recycling (United Nations, 2002:3). However, waste generation continues to increase world-wide following growth in consumption and population growth (UN Habitat, 2014). Moreover, how private sector actors can participate in SWM, their role and effectiveness remain an important and interesting area of research (Sandhu, 2017).

1.2 Background

In Zambia and Lusaka city its capital which is the focus of the study, generates about one million tonnes of waste annually (Nawa, 2017). According to Shalala-Mwale (2008), the high rate of waste generation in Zambia particularly Lusaka city is due to high population growth caused by rural-urban and urban-urban migration which has led to the creation of informal settlements making it difficult for the local authorities to provide basic services for the residents.

In this regard, there have been a number of interventions by Government to improve waste management in Zambia such as the National Conservation Strategy of 1985, National Environmental Action Plan of 1994 and National Solid Waste Management Strategy for Zambia of 2004 (Environmental Council of Zambia, 2004). In these documents SWM among others was identified as one of the major environmental problems faced by the nation. Thereby, proposed integrated approaches in social, economic and cultural development planning processes which require concerted efforts

from the Government, private sector and general public in order to address the problem of poor solid waste management.

While SWM in cities is the responsibility of local municipal authorities, various actors also play a crucial role in solid waste management such as: the private sector, general public, Community Based Organisations (CBOs), Non-Governmental Organisations (NGOs) and donor agencies. This study focused on the private sector participation in solid waste collection particularly on private companies. The poor management of solid waste as a result of population growth, rapid urbanization and development has overwhelmed the ability of local governments to respond to SWM. As a result, municipal authorities are turning to private sector actors to provide SWM services (OECD, 2000, Van Dijk, 2008 and Mukherjee, 2015). In developed countries and developing countries like Zambia, lack of state support has compelled local authorities to be responsible for policy and legal framework that provide incentives to support public and private initiatives in waste management while the private sector can participate in garbage collection, transportation, treatment and disposal (Cointreau, 2000, ECZ, 2004 and Van Dijk, 2008). Other stakeholders like the general public, CBOs and NGOs can support the waste management system by paying for the service and getting involved in waste management programmes (Environmental Council of Zambia, 2004 and Van Dijk, 2008).

Involvement of the private sector in providing SWM services is actively pursued under the principle of Public-Private Partnership (PPP). It is believed that private sector involvement brings private sector technical expertise and private finance into public service to achieve better service provision (Cointreau-Levine and Coad, 2000, Bartone, 2001 and Van Dijk, 2008). Coad (2005) and United Nations Department of Economic and Social Affairs (2012) highlighted that there was an increasing number of private firms collecting waste in developed and developing countries such as the Hong Kong, United Kingdom, United States, India, Nepal and Peru while the remaining was taken care by the Government. As for African countries, the number of private companies involved in the provision of SWM services has increased in countries like Rwanda, Kenya, South Africa and Tanzania (Oduro-Kwarteng, 2011, Ntambo, 2013 and Nishimwe, 2016). In Zambia, the government through local authorities has engaged the

private companies in the provision of SWM services but the country and Lusaka city, still faces problems of SWM. This study therefore, aimed to determine the role and effectiveness of private companies in the provision of solid waste management services in Lusaka city. The study focussed on two private companies Acka Foods and Twincare which operate in Chilenje and Chelstone medium density residential areas respectively. This study is relevant and timely because it contributes to literature interested in SWM services as they relate to private sector participation.

1.3 Statement of the Problem

Lusaka city is currently experiencing serious problems at all stages of solid waste management: collection, sorting, transportation and disposal of garbage (United Nations Integrated Regional Information Network, 2008 and Chulu, 2017). This study focused on the crucial aspect of the chain which is collection of solid waste. Collection of waste from where it is generated or stored is one of the priority areas in the waste management system and waste collection should be done according to licence conditions, using the right mode of transport and proper methods of collection (Environmental Council of Zambia, 2004). Lusaka city alone generates about one million tonnes of waste annually and households are the main generators of waste but recent reports such as those by Nawa (2017) have shown that only half of this is taken to the designated dump site (Nawa, 2017). According to the Central Statistical Office (2015), in 2014, Lusaka had 24.8 percent of household waste collected with uncollected waste accumulating in the streets, vacant lots and is often burned in the open. This is regardless of the Lusaka City Council (Municipal Solid Waste Management) Regulations of 2004, which states that "a waste producer shall use the solid waste management system established by the council where such system is in operation upon payment of a solid waste collection fee (Lusaka City Council (Municipal Solid Waste Management) Regulations of 2004). Poor solid waste management in Lusaka city has led to land, water and air pollution and loss of lives due to outbreak of diseases such as cholera, dysentery and other contagious diseases (Kambole, 2002 and Nawa, 2017). Efforts are therefore, being made by the local authorities and other stakeholders like private companies in developing countries to ensure that there is effective SWM. However, the role of private companies in managing this waste seems minimal. Previous researches such as by Dauchi (2002), Ntambo,

(2013) and Chulu (2017) concentrated on private companies in the provision of SWM services in high density populated areas of Lusaka and not in medium and low-density areas. Other studies Sikazwe (2004), Sibanda (2010) and Hambulo (2014) concentrated on the public sector that is, government's role in the provision of SWM services and not on other stakeholders like the private sector. It is mostly assumed that high density areas are the only areas affected with poor SWM when in reality poor SWM exists in medium and low-density areas. Therefore, this study contributes to this literature by exploring the role and effectiveness of private sector companies in the provision of SWM services in Chilenje and Chelstone medium density residential areas of Lusaka city.

1.4 Research Objectives

1.4.1 General Objective

The general objective was to explore the role and effectiveness of private companies in the provision of solid waste management services in Lusaka city.

1.4.2 Specific Objectives

i. To examine the policy and legal guidelines promoting private sector participation in solid waste management in Zambia.
ii. To examine the role of other key stakeholders in solid waste management in Chilenje and Chelstone residential areas.
iii. To determine the management practices that Acka Foods and Twincare companies have in managing solid waste in Lusaka city.
iv. To analyse the challenges faced by private companies in management of solid waste in Lusaka city.

1.5 Research Questions

i. What policy and legal guidelines promote private sector participation in solid waste management in Zambia?
ii. What is the role of other key stakeholders in solid waste management in Chilenje and Chelstone residential areas?
iii. What management practices do Acka Foods and Twincare companies have in managing solid waste in Lusaka city?

iv. What are the challenges faced by private companies in management of solid waste in Lusaka city?

1.6 Significance of Study

Previous studies have revealed more of solid waste problems and policy issues in SWM and there was little understanding of linkages between performance of the private companies and the management practices necessary for improved service delivery. This study helps to shed light on less explored areas of SWM such as private sector participation in medium density areas and management practices of the private companies which may help policy makers to understand the effectiveness of private companies in waste management. The findings of this study may help relevant authorities and the various stakeholders like the lines Ministries, local councils, public policy makers, public and private institutions involved in waste collection and Community Based Enterprises (CBEs) to improve on their planning, development and implementation of sustainable strategies for better management of solid waste. This may in turn lead to a clean environment, reduction in the disease burden and improve the health standards of the citizens.

1.7 Conceptual Framework

Over the years, SWM has emerged as a major issue in most countries around the world. There have been discussions on the best ways to provide SWM services. However, despite these discussions, the provision of such services should be about providing services that are affordable and effective. Lusaka city is currently experiencing serious problems at all stages of SWM which include: collection, sorting, transportation and disposal of garbage (United Nations Integrated Regional Information Network, 2008 and Chulu, 2017). The provision of SWM services had previously been the sole responsibility of the central government. However, the costs involved and the high rate of waste generation led to the local authorities engaging the private sector in the provision of SWM services (Waife, 2014). The researcher had an opportunity to visit the study areas prior to the study and it was seen that the areas are faced with poor SWM. Scoping works raised concerns about the way residents of medium-density areas disposed of waste. Therefore, the overall objective of this study was to explore the role and effectiveness of private companies in the provision of SWM services in Lusaka city.

The conceptual framework used in this study depicts the factors which if taken into account would lead to effective solid waste management in areas serviced by private companies. Effective SWM by private companies is dependent on a number of factors which among others include the following: implementation and enforcement of policy and legal frameworks in place, stakeholder participation in SWM, effective management practices of private companies and addressing SWM challenges. It is expected that if these factors are taken into consideration by the relevant policymakers or legislators, waste collection in cities may improve and wastes may reduce in areas serviced by private companies.

The researcher constructed the conceptual framework showing the nature of relationships between the variables of the study as shown in Figure 1 below.

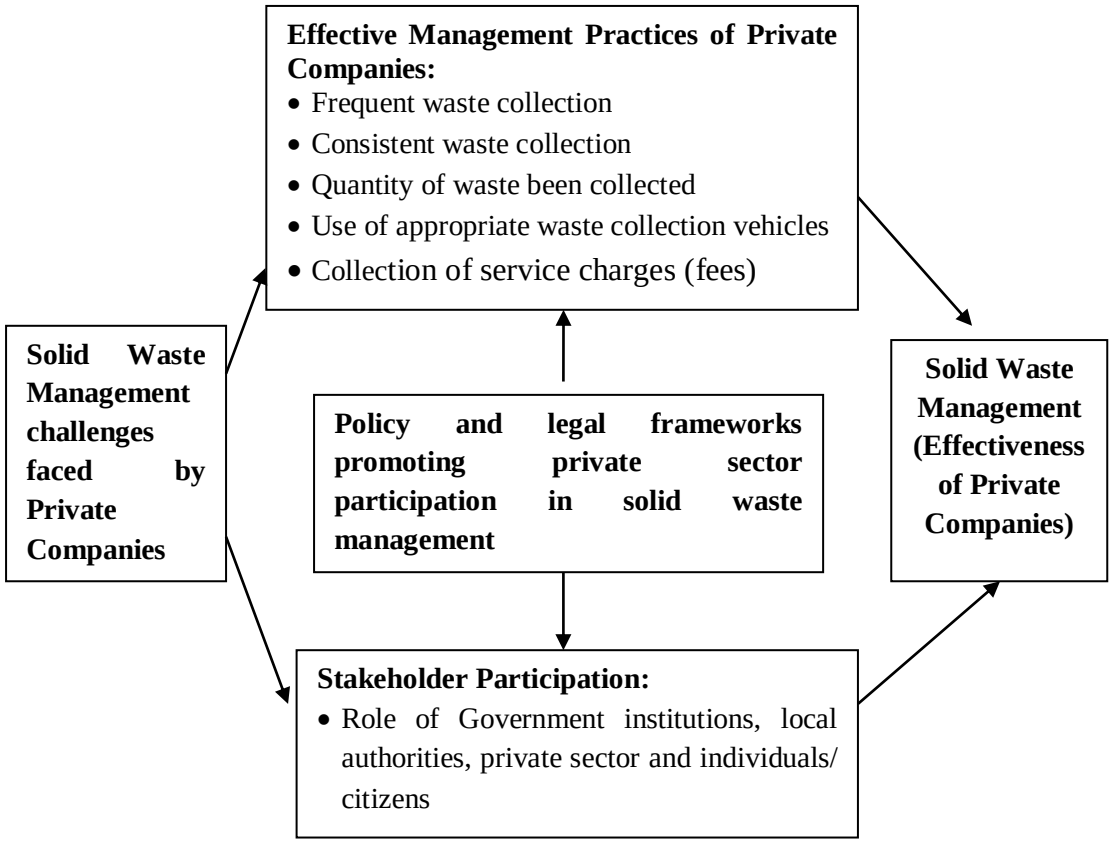


Figure 1: **Conceptual Framework of Private Sector Participation in Solid Waste Management Service Delivery (**Authors Conceptualisation)

It is important to understand the nature of relationships between the variables of the study as shown in Figure 1 above. The conceptual framework above shows that in order to achieve effective SWM, challenges faced by private companies need to be addressed. The challenges faced by private companies among others include: financial constraints, inadequate enforcement of legal and regulatory frameworks, low stakeholder participation, negligence by some residents in managing waste and inadequate staff. In order to address these challenges other factors, need to be taken in to consideration such as participation of various stakeholders in SWM; implementation and enforcement of policies and legal frameworks in place; and effective management practices of private companies.

Stakeholder participation in SWM is the role of various stakeholders among them are Government institutions, local authorities, private sector, CBEs, NGOs and citizens. The government institutions have a role of providing policy and legal frameworks that can be enforced through legislation, regulations and other forms of mandatory arrangements. The local authorities are responsible for planning, organizing, executing and supervising waste management services as well as operating and management waste disposal facilities in the cities. The citizens are supposed to ensure that they maintain and promote hygiene and cleanliness by managing solid waste at source by storing in bins, minimising waste, paying for solid waste collection and reporting the inefficiencies of private companies to the Councils. Other stakeholders like the CBOs and NGOs can support the waste management system by paying for the service and getting involved in waste management programmes (Environmental Council of Zambia, 2004 and Van Dijk, 2008).

Government plays the role of an effective regulator in the interest of the citizens and this is in conformity with the existing policy guidelines enacted by Parliament. Hence, this study attempted to analyse the policy guidelines that promote private sector participation in SWM. In order to deal with poor SWM, Parliament enacted Acts and legislation on how solid waste is to be collected and dumped or disposed of. These laws were enacted in order to control and monitor private actors' operations which include private companies in collecting waste in their areas of operation. Different government authorities have been given power to supervise these rules and regulations. This policy

and legal provisions analysed in this study included: The Public Health Act Cap 295, Local Government (Solid Waste Management), Regulations, 2011, Environmental Management Act No 12, 2011 and Solid Waste Regulation and Management Act, 2018.

In this study, the effectiveness of private companies was assessed in terms of their management practices which included how frequent and consistent private companies were in collecting waste, if they collected the prescribed quantity of waste, if they used appropriate vehicles for waste collection and if they were able to collect service fees from their client to ensure financial cost recovery of the solid waste services by the companies.

The framework shows that there is a relationship between challenges faced by private companies in management of solid waste, stakeholder participation in SWM, management practices of private companies and policy guidelines promoting private sector participation in SWM as they have an influence on solid waste management. It could be positive or negative influence. For example, enforcement of SWM laws, stakeholder participation and good management practices could lead to effective SWM while inadequate enforcement of SWM laws, lack of stakeholder participation and poor management practices could lead to poor SWM.

1.8 Operational Definitions

Private sector is defined as private sector corporations, institutions, firms and individuals, operating registered and/or incorporated businesses with official business licenses, an organized labour force governed by labour laws, some degree of capital investment, and generally modern technology (Furedy, 1991). In this study, private sector will refer to the private waste management companies.

Effectiveness is defined as the extent to which stated objectives are met (Australian Government Productivity Commission, 2013). In this study, effectiveness of private companies is defined as the extent to which private companies meet their objective of ensuring sound SWM in their areas of operation through frequent and consistent collection of waste, high quantity of waste collected, use of appropriate waste collection vehicles and collection of service charges or fees.

Solid waste: Solid waste is defined as "garbage, domestic waste, municipal waste, household refuse, junk, agriculture waste, healthcare waste, construction waste, commercial waste or industrial waste, but does not include hazardous waste or human waste, that is not in the form of treated sludge or other form intended for final disposal as waste" (Solid Waste Regulation and Management Act, 2018). The World Bank (2011) defines solid waste as any refuse, garbage, sludge and any other discarded materials including: solid, semisolid, or contained gaseous material, emanating from community activities. In this study solid waste will refer to garbage and any other discarded materials resulting from domestic activities such as food stuffs, paper, plastics, clothing, etc.

Solid waste management: Solid Waste Management on the other hand means a direction, measure, strategy, an administrative, a supervisory or an operational activity used for the management or control of solid waste (Solid Waste Regulation and Management Act, 2018). Solid waste management in this study therefore, includes all activities pertaining to the collection, transport and disposal of the domestic solid waste by private companies.

1.9 Limitations and Scope of the Study

This study being a case study was limited to two (2) medium residential areas of Lusaka city, as a result, the findings may not be generalised to all the WMD or zones where waste is collected by private companies. According to Denzin (1983), the context and purpose of a project determines whether a case study should seek to generalize and claim to be representative and the objective of all research projects should not necessarily be to generalise the findings whether case studies or not. Hence, it is not the researcher's intention to generalize the findings of this study. Another limitation to this study was finances as the researcher used personal funds; for that reason, acquiring tools and other equipment for interviews was difficult. The researcher had to borrow funds to acquire the tools. The other limitation faced during the study was that it was difficult to make interview appointments with key informants from the private companies during working hours, therefore, the researcher had to carry out interviews after working hours. In order to ensure credibility, reliability and validity of the data collected, respondents were allowed to fill in their questionnaires without inference and those that were

interviewed were allowed to adequately express their views. Questionnaires had some open-ended questions to allow respondents express themselves in order to eliminate biasness. The researcher also spent a month to work in the study area and collected data through observations. The triangulation of research methods gave assurance for data credibility, reliability and validity.

1.10 Trustworthiness of the data

The study used a qualitative research design particularly a case study to collect the data. Respondents were mainly selected based on purposive sampling. Key informant interviews were conducted with staff from the private companies, LCC and ZEMA while questionnaires were administered to households in the study areas Chilenje and Chelstone medium density residential areas. All respondents were purposively selected because the researcher believed that they would provide factual information about the SWM and services of the companies and therefore, help determine the effectiveness of the companies. Data was analysed qualitatively through thematic approach where written and spoken information was converted into data that could be analysed and interpreted. According Connelly (2016), trustworthiness a study refers to the degree of confidence in data, interpretation, and methods used to ensure the quality of a study. Although there have been debates in the literature as to what constitutes trustworthiness (Leung, 2015), criteria outlined by Lincoln and Guba (1985) are accepted in many qualitative studies which include credibility, dependability, confirmability, and transferability. Authenticity was later added (Guba & Lincoln, 1994). Therefore, trustworthiness of this qualitative research data was evaluated in terms of credibility, reliability, and objectivity.

Reliability refers to research findings being of acceptable nature according to rules and standards in the research domain. In order to ensure reliability of data, the researcher triangulated the research methods. The respondents were allowed to fill in their questionnaires without inference and those that were interviewed were allowed to adequately express their views. Questionnaires had some open-ended questions to allow respondents express themselves in order to eliminate biasness. This was in order for the respondents to provide reliable data which could be used for decision making and avoid inconsistencies (Yin, 1994).

Credibility refers to producing truthful and accurate results (Nkhata, 1997). The results of the study should be as a result of the investigation rather than other causes. In order to ensure credibility of data, the researcher also spent a month to work in the study area and collected primary data through observations in the study areas. The researcher further used member checking to determine the accuracy of the qualitative finding through conducting follow up interviews with key informants. The researcher provided quotations and references that supported the conclusions.

Objectivity is the degree to which the researcher can show whether the results are justified and grounded (McMurray, 1990). It allows the researcher to demonstrate the neutrality of the research interpretations. The researcher was clear about observations in the report and provided detailed explanations for observations and findings of the study without prejudice.

1.11 Ethical Considerations

Ethics is the application of critical moral reflection of concepts, assumption, beliefs, attitudes, emotions, reasons and arguments in research (Banda, 1998). According to Goddard and Melville, (2001), apart from instrumentation and procedural concerns, collection of data from human beings raises concerns. Hence, the researcher should ensure to guard respondents from any physical and psychological harm. Therefore, in this study, the researcher ensured that permission to undertake the study was obtained from the University of Zambia, Humanities and Social Sciences Research Ethic Committee (UNZAHSSREC), Acka Foods and Twincare companies and Lusaka City Council management. The respondents were informed that participation in the study was voluntary and that they could withdraw from the study at any time if they so wished. This was in order for respondents not to be coerced into participating in the study. Essentially, this meant that respondents were fully informed about the purpose of the study and procedures involved in the study in order to obtain consent to participate in the study. The respondents were assured that their identities would be anonymous and the information that was obtained would be confidential. Therefore, open–ended questions were also used to enable participants to decide which information to give. Further, the findings of the study have not revealed names of the participants. Confidentiality potentially allowed for the free flow of information between the respondent and

researcher and protected the privacy of respondents' personal life and all their issues. Confidentiality helped to build and develop trust. Fairness in selection of participations was also exercised. In addition, the researcher focussed on the purpose of the study and did not change statements during the course of the research.

1.12 Organization of the Study

The dissertation is divided into six chapters. Chapter one is the introduction. It outlines the background information on the subject, statement of the problem, specific objectives and research questions of the study and significance of study. It also provides for the conceptual framework, operational definitions, limitations and scope of the study, trustworthiness of data and ethical considerations. Chapter two presents the literature reviewed globally, regionally and locally in relation to the study topic. It outlines the private sector involvement in solid waste management, policy and legal guidelines promoting private sector participation in solid waste management in Zambia, role of other stakeholders in solid waste management and challenges faced by private companies in management of solid waste. Further, chapter three highlights the methodology used. It outlines how the research was conducted in terms of its design, study area, study population, sample size, sampling techniques, data collection tools, methods of data collection and methods of data analysis. Furthermore, chapter four presents the findings and chapter five presents discussion of the findings. Lastly, Chapter six presents the summary of conclusions and recommendations. The pages that follow are references and appendices.

Conclusion

In summary, this chapter presented the background of the research, statement of the problem, the purpose of the study as well as the specific objectives of the study and research questions. The chapter also includes the significance of the study, conceptual framework, limitations encountered during the research, trustworthiness of the data and lastly, outlines the ethical consideration.

In the next chapter, the study aimed at discussing previous works around SWM. The chapter elaborates themes such as: private sector involvement in solid waste management at global, regional and Zambian perspective, policy and legal guidelines

promoting private sector participation in solid waste management in Zambia, the role of other key stakeholders in solid waste management and the challenges faced by private companies in management of solid waste. This was in order to understand the legal frameworks guiding private sector participation in SWM in Zambia, the relevance of private sector participation in solid waste management and roles of stakeholders in SWM as well as the challenges confronting the efficient and effective operations of the private sector.

CHAPTER TWO: LITERATURE REVIEW

2.0 Introduction

Several studies have been carried out in relation to private sector participation in the provision of solid waste management (SWM) services around the world, also in Zambia. It was therefore, necessary to review the existing literature to get a better view of involving the private sector particularly private companies in the provision of SWM services, policy and legal guidelines promoting private sector participation in SWM, challenges faced by private companies and the role of other key stakeholders in SWM. This chapter discusses previous works around SWM. Section 2.1 looks at private sector involvement in solid waste management while section 2.2 highlights the policy and legal guidelines promoting private sector participation in solid waste management in Zambia. Section 2.3 delves into the role of other key stakeholders in solid waste management and lastly section 2.4 looks at the challenges faced by private companies in management of solid waste.

2.1 Private Sector Involvement in Solid Waste Management

Solid waste collection has traditionally been carried out by the local authorities however, the increasing financial burden on the local governments and the inefficiency of the local authorities in developed and developing countries necessitated the involvement of the private sector in solid waste collection (Cointreau-Livine and Coad, 2000, Oduro-Kwarteng, 2011 and Nishimwe, 2016). Local authorities are mostly characterized with insufficient financial resources, lack of expertise, bureaucratic delays and political interference (Ntambo, 2013). According to Cointreau-Levine and Coad (2000), conditions leading to efficiency captured by the private sector in developed countries such as the United States, Canada, and Great Britain include smaller, younger crews; lower absenteeism, wages, and benefit costs; more flexible scheduling; efficient vehicle routing; better designed vehicles; managerial incentives; faster vehicle repairs; vehicle standardization; and competition.

These same conditions of efficiency sometimes are reported by developing countries like Nigeria, Columbia and Mexico that have involved the private sector in solid waste services (Cointreau-Levine and Coad, 2000). Also, private companies engaged in waste

management have greater efficiency and enhanced performance because they are free from bureaucratic hurdles and often provide better salaries, which makes it easier to obtain qualified staff. This has also been alluded to by Cointreau-Levine and Coad, (2000), Canadian Construction Association, (2001), Grimshaw et al., (2002), Rothenberger et al., (2005) and Waife, (2014). The private sector is endowed with qualities such as political independence, economic rationality, efficiency, dynamism and innovation; qualities which make it measure up favourably to the public sector. However, the private sector is faced with a number of constraints which among other things include lack of consistent enforcement of legislation and By-laws which restricts certain works to the local authorities and poor legislation (Palczynski, 2002).

2.1.1 Global Perspective

According to Eggerth, (2005), private sector involvement in solid waste collection in developed countries emerged in the 1970s, and since then there has been increasing private sector involvement in solid waste collection service in many parts of the world. By 1989, Latin American cities (Aires, Buenos, Caracas, Sao Paulo and Santiago) had private sector involvement in solid waste collection (Bartone, 1991). By 1994, the United States had more than 10,000 private firms engaged in solid waste collection in urban areas (Cointreau, 1994). Cointreau-Livine and Coad (2000), Eggerth (2005) and United Nations Department of Economic and Social Affairs (2012) revealed that more than 80 percent of solid waste is collected by the private firms in developed countries such as the United Kingdom, United States, Canada and Malaysia while the remaining is taken care of by the government. The developed countries now have private sector involvement in all the elements of solid waste management, from collection, sanitary landfilling, recycling to resource recovery.

In most developing countries, private sector involvement in solid waste collection started gaining momentum in the 1990s. The World Bank encouraged private sector involvement in the World Development Report of 1994. Since then, the development partners have supported the drive for private sector involvement in solid waste collection and management through capacity building and loans for provision of equipment (Oduro-Kwarteng, 2011). In India, private sector involvement in solid waste collection gained momentum in the mid-1990s in major cities such as the Guwahati, Chennai and

Hyderabad and by mid-2000s, the participation grew in waste processing, sanitary landfill development and management of dumpsites (Sandhu, 2017). In Peru, a survey was carried out in 1994 by the metropolitan municipality of Lima which revealed that 65 per cent of the districts of metropolitan municipality provided waste management services by contracting formal companies (Chulu, 2017).

2.1.2 Regional Perspective

Private sector participation in SWM has increased in Africa and particularly, Sub-Saharan Africa. The number of private companies involved in the provision of SWM services has increased in countries like Egypt, Rwanda, Kenya, Tanzania, South Africa, etc. For example, Kigali, the Rwanda capital city, is the only city in Africa where solid waste collection service is fully provided by the private sector and the bill submitted directly to the households since 2012 (Nishimwe, 2016). In Egypt, private companies operate in all the four districts of the country and the country has 25 modern composting plants established by the government and rented to the private sector (Ntambo, 2013). In Tanzania, the private sector was engaged in 1994 and waste collection by over 50 firms increased to over 30 percent by 2002 (Chinamo, 2003). This shows how private sector involvement can increase solid waste collection. South Africa has some privately-owned landfills. Recycling of domestic, commercial and industrial waste accounts for approximately 24 percent of the total solid waste in Cape Town (Chulu, 2017). Composting though at small scale is performed by private companies in South Africa and approximately 41,000 tonnes of domestic and commercial waste is composted at several composting facilities in the Cape Metropolitan Area (Corrado, 2008).

2.1.3 Zambian Perspective

Private sector participation in SWM has increased in Zambia since the 1990's. The government through the local authorities such as the Lusaka City Council (LCC), established the Public-Private Partnerships in garbage collection in 2003 with a view of improving efficiency in SWM as private companies were perceived to be more effective considering that they had the necessary expertise and resources (Chulu, 2017). To ensure effective management of waste, the LCC works in partnership with private waste management companies which service conventional and peri-urban areas in the city. Currently, the LCC has 16 Waste Management Districts (WMD), and of these, 14 are

manned by the private sector while the other two are under the LCC. In all districts, with an exception of one, waste collection will continue to be out-sourced to the private waste management companies through franchise contracts (Nawa, 2017).

Waste collection has continued to be a challenge in Lusaka as garbage is clearly seen in designated areas such as residential areas, open spaces and markets. According to Siliya (2018), the management of solid waste had over the years been a challenge for the towns and cities in the country generally because of increased population and economic activities, which led to increased generation of waste and posed a burden on the municipal budget due to the high costs related to waste management. The Government of Republic of Zambia in November, 2018, therefore approved the Solid Waste Regulation and Management Act, 2018 which is meant to provide for the incorporation of solid waste management companies and define their statutory functions, the licensing of solid waste service providers, operators and self-service solid waste providers and provide for their functions and the regulation, operation, maintenance and construction of landfills and other disposal facilities (Solid Waste Regulation and Management Act, 2018).

Studies on performance of service delivery by private companies is associated with gains in service efficiency more than by municipal authorities (Cointreau-Levine and Coad, 2000; Post et al., 2003, Ntambo, 2013 and Chulu, 2017). However, Bel and Warner (2008) argue that the results on efficiency gains of private companies over municipal authorities is inconclusive in that the efficiency gains have shown mixed results and for this reason, further studies are required. Case studies of private companies involvement in SWM in some developing countries, for example, in India (Nimisha and Dharmendra, 2016; Sandhu, 2017), in Ghana (Oteng, 2009; Waife, 2014), Kenya (Karanja, 2002; Mwangi, 2003), in Tanzania (Mbuligwe, 2004; Kassim, 2006), showed that despite increased coverage in some of the countries, the service quality, efficiency and sustainability of private companies service delivery are still issues that require further studies to identify drivers for performance. Oduro-Kwarteng (2011) states that the private companies face challenges of inefficiency and low service quality and this may be due to a number of issues such as institutional arrangements (policy, regulation, legislation), weak capacity, how companies are run and levels of awareness.

The efficiency of the private sector depends on a number of factors, which may be internal or external to private sector organization. Thus, this study sought to assess the efficiency of private companies in the Zambian case and in particular Lusaka city.

In Zambia, studies by Ntambo (2013) and Chulu (2017) were carried out in Lusaka on effectiveness of contracting out SWM services. According to the researchers, the studies revealed that the contracting out of SWM services had not achieved their intended purpose because the levels of cleanliness in the city had not improved. The studies also revealed that the private companies concentrated their operations in low density areas and not in medium and high-density areas which are characterized with poor SWM. This is because private companies prefer operating in medium density areas than in high density areas since residents in medium density areas can pay for their services because they have a higher socio-economic status than residents in high density areas. There is a gap in the literature in that it is not clear why levels of cleanliness in the city had not improved. It could be that residents had not been sensitized on the presence of private companies in their areas or residents were not just paying for the services of private companies and chose to dispose waste in open areas. It is for this reason that the study was undertaken to address these gaps.

From the literature review, it is obvious that the studies did not focus on the empirical relationships of theoretical issues influencing performance of private companies but revealed solid waste problems and policy issues in SWM. There is little understanding of linkages between performance of the private companies and their management practices necessary for improved service delivery. To better understand the linkages between performance of private companies and the different factors influencing performance, it was necessary to look at: first, policy guidelines promoting private sector participation in SWM in Zambia. Second, the management practices of private companies in management of solid waste which included: the frequency of waste collection by private companies; how consistent private companies were in collecting waste; the quantity of waste collected by the private companies; the type of waste collection vehicles used by private companies; and whether clients were paying the service charges or fees. Third, what the role of other key stakeholders in SWM was and fourth, challenges private companies faced in management of solid waste. The empirical

evidence of the linkages between these four theoretical issues and the performances of the private companies would therefore, provide an understanding of the factors that may drive effectiveness of private companies or act as barriers to effectiveness of private companies. The relevance of assessing effectiveness of private companies involved in SWM in developing countries is an emerging issue. Literature like Oduro-Kwarteng (2011) and Sandhu (2017) revealed that there were no standards or guidelines for assessing effectiveness of private companies involved in SWM, and therefore different approaches are used by researchers. The data on performance from this study may therefore provide a basis for monitoring performance of the private companies in the provision of SWM services in future. The data may also be useful for authorities and the various stakeholders to improve on their planning, development and implementation of sustainable strategies for better management of solid waste.

2.2 Policy and legal guidelines promoting private sector participation in solid waste management in Zambia

In developing countries, including Zambia, the problem of solid waste management has become complex and requires long-term solutions. Considering African cities, including Lusaka, literature reveals that less than 30% of urban solid waste is collected and disposed of properly (Central Statistical Office, 2012). Due to lack of funding and no sustainable waste management system, the local authority in Lusaka city, the Lusaka City Council (LCC) only services the Central Business District (CBD), markets, hospitals, commercial institutions and governmental institutions. Therefore, to deal with the problem of SWM, most cities including Lusaka have privatised SWM services (Nawa, 2017). In order to deal with poor SWM, the Zambian law provides rules and regulations on how solid waste is to be collected and dumped or disposed of. Different Government authorities have been given power to supervise these rules and regulations. Parliament enacted SWM laws which aim among others to control and monitor private actors operations in collecting waste in their areas of operations. The main laws and regulations revealed in this study that regulate solid waste in Zambia and promote private sector participation in include:

a. Public Health Act Cap 295;
b. Local Government (Solid Waste Management), Regulations, 2011;

c. Environmental Management Act No 12, 2011; and
d. Solid Waste Regulation and Management Act, 2018.

2.2.1 Public Health Act Cap 295

The Public Health Act CAP 295 repealed in 1995 provides for the prevention and suppression of diseases and generally to regulate all matters connected with public health in Zambia. It mandates the Lusaka City Council (LCC) with the responsibility of preventing and controlling outbreak and spread of contagious diseases like cholera, dysentery, typhoid among others (Public Health Act). The LCC also has a responsibility of ensuring that citizens do not dump waste indiscriminately. Under the Inspectorate Section of the Public Health Department of the LCC, inspectors are empowered to enforce the Public Health Act. It is therefore an offence to dispose of waste in a way that can cause diseases or hazard to health under this Act (ILO, 2001: 19).

One of the weaknesses of the Public Health Act is that it does not provide for private actors involved in SWM. The Act caters for areas where LCC has jurisdiction to collect solid waste. It also empowers the LCC to take lawful and practicable measures for maintaining its municipality. Therefore, whatever the LCC decides as necessary measures to improve public health is included for in the law. So, if the LCC decides to enter into contracts with private companies for the collection and disposal of solid waste, this is possible under the Public Health Act (ILO, 2001:20). When fully enforced, the Public Health Act can help to curb environmental pollution in the Lusaka city, improve the health situation of the citizens and put in place effective SWM.

2.2.2 The Local Government (Solid Waste Management) Regulations, 2011- Statutory Instrument No. 100 of 2011

The Local Government (Solid Waste Management) Regulations, 2011 provides for the management of solid waste generated in, imported into or transferred through an area and other waste which is managed together with, or in, the same facility as the solid waste. These regulations binds all waste producers, waste managers, collectors, transporters and recyclers of solid waste residing or conducting business in a Council.

Under these By-laws, the Waste Management Unit (WMU) of the Council is established to be responsible for, and coordinate activities related to, municipal solid waste management within the area of the council. The Unit is mandated to:

1. On behalf of the Council, appoint waste managers which include private companies, through the use of appropriate procurement procedures, on a competitive basis, in accordance with the Public Procurement Act of 2008;
2. Advise the council in relation to the preparation and conclusion of the municipal solid waste management contract with any person;
3. Publish in the Government Gazette and in a daily newspaper in circulation in Lusaka for three consecutive days, the fees which are to be charged by waste managers as solid waste fees;
4. Undertake inspections of waste management districts and waste management zones in which waste managers have been appointed;
5. Operate, in accordance with requirements of a permit issued by the Zambia Environmental Management Agency, such solid waste disposal facilities as the council determines; and
6. Collect fees from persons who dispose of solid waste at the facilities (Local Government (Solid Waste Management) Regulations, 2011).

The Waste Management Unit is given the authority to engage waste managers in the Waste Management Districts (WMDs) for the purpose of performing its functions under these regulations.

The Local Government (Solid Waste Management) Regulations, 2011 stipulates the duties of a waste manager as follows:

1. Operate in accordance with a license to transport waste issued by the Zambia Environmental Management Agency;
2. Operate within the boundaries of the waste management district in respect of which the waste manager has concluded a solid waste management contract with the Council;
3. Use only equipment approved by the Agency;
4. Provide a waste receptacle as a term of the contract entered into with the waste producer;

5. Secure waste during collection and transportation to prevent any waste spills from the waste collection vehicles; and
6. Provide all employees engaged in solid waste management services with appropriate protective clothing.

Further, a waste manager who infringes these sub regulations commits an offence and is liable, upon conviction, to a fine not exceeding eighty penalty units or to imprisonment for a period not exceeding six months, or to both. In addition to the penalty specified, the Council may cancel the contract entered into with the waste manager (Ibid).

The By-laws also stipulate the appointment of inspectors. Inspectors are issued with identity cards by the Town Clerk of the Council. Their role is to monitor, inspect and enforce the provisions of these By-laws. With regard to the contract signed between the waste manager and the Council, the inspectors have to ensure that the waste management provisions of the Franchise Service Agreement are adequate. Private companies are engaged by the local authorities in this case the city councils through the issuance of a Franchise Service Agreement contract and are expected to uphold the franchise conditions. The contract comprises Articles covering various aspects such as: startup, extensions, termination and disputes, Councils undertakings, the contractor's undertakings and protection of the environment, charges/tariffs, franchise fees, disposal fees among others. The contract is meant to provide effective municipal solid waste management services to the citizens in order to assist in eliminating unpermitted and indiscriminate disposal of waste and protecting the environment from the effects of improper disposal of wastes (Lusaka City Council, 2004).

The By-laws also stipulate duties of waste producers which include among others facilitation of the removal of solid waste from their premises by placing the waste bin or receptacle in a place near the entrance to the premises on the day that the waste manager has to collect waste. The contract between the waste producer and the waste manager of a particular district has terms and conditions which are agreed upon and which include storage of waste before collection and provision of bins or receptacles (ibid).

2.2.3 Environmental Management Act, 2011

The Environmental Management Act of 2011 provides for integrated environmental management and the protection and conservation of the environment, prevention and control of pollution and environmental degradation, repealing and replacing of the Environmental Protection and Pollution Control Act, 1990, renaming of the Environmental Council of Zambia (ECZ) as the Zambia Environmental Management Agency (ZEMA) among others. The Agency is responsible for developing, in liaison with the relevant appropriate authority, standards and guidelines relating to the protection of air, water, land and other natural resources and the prevention and control of pollution, the discharge of waste and the control of toxic substances (Environmental Management Act, 2011).

The Environmental Management Act supports the operations of private actors in SWM. According to the Environmental Management Act (2011), the Agency may, upon application, issue a waste management licence to a person to allow the person to:

a) reclaim, re-use, recover or recycle waste;
b) collect and dispose of waste from industrial, commercial, domestic or community activities;
c) transport waste to a disposal site;
d) own, construct or operate a waste disposal site or other facility for the permanent disposal or storage of waste; or
e) Transit, trade in or export waste.

Under this Act, the Zambia Environmental Management Agency is responsible for approving locations to be used for waste disposal and issue a license to the local authority to allow them to dispose of waste in the location. Before issuance of a license, the Agency is mandated to conduct an Environmental Impact Assessment. The Agency also provides technical advisory services to waste operators. It also gives guidance on the correct means of storage, collection and disposal of any class or type of waste (ibid).

2.2.4 Solid Waste Regulation and Management Act, 2018

The Solid Waste Regulation and Management Act of 2018 provides for the sustainable regulation and management of solid waste; general and self-service solid waste services;

the incorporation of solid waste management companies; the licensing and functions of solid waste service providers, operators and self-service solid waste providers and provide for their functions among others. With regards to management of solid waste, a local authority in this case the LCC shall, in accordance with the Constitution, the Local Government Act, 2019 and this Act, manage solid waste and may undertake solid waste management in partnership or association with another local authority, public body or private body and delegate the provision of solid waste services to private bodies to be undertaken in accordance with this Act (Solid Waste Regulation and Management Act, 2018: 363-364).

The Solid Waste Regulation and Management Act (2018) states that where a local authority establishes a company to provide solid waste management or delegates its functions to a private body, the local authority shall not:

a) Undertake solid waste management in a solid waste management area that is being managed by a solid waste management company; and
b) Provide solid waste services in the service zone covered by a licensed service provider.

From the above discussed legislation, private companies operate in line with regulations provided for under the Public Health Act Cap. 29, Local Government (Solid Waste Management) Regulations, 2011, Environmental Management Act, 2011 and Solid Waste Regulations and Environmental Management Act, 2018. The provisions of these By-laws bind all waste managers, collectors, transporters and recyclers conducting business in Lusaka city.

2.3 Role of Key Stakeholders in Solid Waste Management

Scholars have emphasized that management of waste cannot be done individually unless through partnerships, for instance, Taylor (1999:264) stated that "rather, the development of sustainable MSW management systems requires the development of effective partnerships among all MSW stakeholders."

The UN-HABITAT (2010), states that a solid waste management system consists of three main stakeholders: the providers, including the local authority who actually offer the service; the users, who are the clients and the external agents in the enabling

environment, including both national and local government, who organise the boundary conditions and make change possible. According to Kurian (2006), stakeholders in waste management are people and organizations having an interest in good waste management and participate in activities that make that possible. The municipality, who are responsible for urban cleanliness and the citizens or households who use the system, are stakeholders in waste management. But other stakeholders differ in each city, so they need to be identified in the local context and often also grouped according to their interests. Generally, stakeholders in SWM can be categorized under state and non-state actors. State actors include the public sector that is, local municipal authorities while non-state actors include the private sector, community-based organizations, nongovernmental organizations, etc. Stakeholders used in this study fall in the above categories, which include the public sector (Lusaka City Council and Zambia Environmental Management Agency) and private sector (private companies), CBOs and the households.

The public sector actors in SWM include government institutions or agencies like the municipal local authorities and environmental regulatory agencies. They operate under certain innate restrictions. For example, the stiff laws, under which they must operate, make it difficult to transform operational matters. In addition, the public sector must employ a large number of people since much of the work includes street sweeping and collection and disposal of waste which are done manually. The public sector also suffers from low efficiency of staff, inadequate supervision and poor and inadequate equipment. The government has a role of providing a policy and legal framework that can be enforced. This guidance is catered for through legislation, regulations and other forms of mandatory arrangements. Government is supposed to provide incentives to support public and private initiatives in solid waste management (Environmental Council of Zambia, 2004). In Zambia, the Lusaka City Council is responsible for planning, organizing, executing and supervising waste management services as well as operating and management waste disposal facilities in the city. According to the GRZ (2011), every town of Zambia has a Council responsible for designating and operating waste disposal facilities in accordance with the Environmental Management Act. Councils are also responsible for monitoring the management and use of waste disposal facilities as

well as ensuring compliance with these regulations by waste producers and waste managers within the area. Any private company that does not perform well, has its contract terminated and those private companies that perform well have their contracts renewed (GRZ, 2011). The Zambia Environmental Management Agency (ZEMA) plays a regulatory role in the management of waste in terms of collection and transportation of waste, operation of disposal sites, issuing licenses to transporters of waste and also people that operate the disposal sites.

The private sector can be classified into two categories that is, formal and informal private sector. The formal private sector institutions include registered enterprises involved in SWM services e.g. private companies have a role in collection, transportation, disposal and treatment. While the informal private sector institutions, firms and individuals include unregistered waste management activities undertaken by individuals, community groups, waste pickers, scavengers and non-registered firms. These groups of waste management stakeholders are usually unregulated by government agencies (Ahmed and Ali, 2004). The private informal sector is also comprised of Community Based Organizations (CBOs) which are formed by community members. In general, CBOs mostly take part in primary collection and street cleaning (Wilson et al., 2009). On the other hand, Non-Governmental Organisations (NGOs) and donor agencies are also stakeholders and have a role in the education of communities, advocacy for a clean environment, supporting of waste management initiatives (Environmental Council of Zambia, 2004). Residents or households who are stakeholders are expected to play their role in waste management by ensuring that they maintain and promote hygiene and cleanliness by managing solid waste at source by storing in bins, paying for solid waste collection and reporting the inefficiencies of private companies to the Councils as well as getting involved in community waste management programmes (Environmental Council of Zambia, 2004 and Mulwanda, 2017). The informal sector is usually active in waste management process in developing countries due to poverty, unemployment or under employment and Zambia is no exception.

It can be concluded that effective waste management would greatly be influenced by the role that stakeholders play in making sure they work towards achieving the common interest. This view is also supported by Yukalang, et al., (2017), who states that the

environmental problems of cities that are associated with poor SWM can be addressed by the interaction of multiple stakeholders.

2.4 Challenges faced by Private Companies in Management of Solid Waste

Scholars have emphasized that private waste management companies around the world face a myriad of challenges that have greatly constrained provision of SWM services. In this section, some of the challenges shall be discussed.

2.4.1 Global Perspective

At a global level, one of the challenges faced by private sector companies include the challenge of pricing. The pricing method for waste collection is not uniform around the world as there is no standard, therefore it is difficult to arrive at a fair price. This pose a challenge for private waste management companies in that low prices make it difficult for them to recover the operation and capital costs (Douti et al., 2017). According to the Hoornweg et al., (2012), the user charge collection rate for waste management range from a low of 41% in low income countries to a high of 98% in high income countries.

In developing countries, transportation of waste from the collection point to disposal sites is a major problem because of the long distance from the collection points to the disposal sites while in developed countries, disposal sites are made closer to the communities in order to sort out transport challenges and for it to be cheaper for the waste collectors to transport waste (Douti et al., 2017). Bad roads are also a great challenge to waste management in developing countries. This is why there are a lot of breakdowns and abandoned vehicles parked along the road sides (Nimisha and Dharmendra, 2016 and Sandhu, 2017).

In Bangalore, there is a general agreement that government pays for waste management, therefore expenditure on public services is connected to the central civil service. This brings about unwillingness of people to pay private companies for waste collection, since they believe that government should pay for waste management (Ngunju, 2018 and Anschuetz, 2004). This leads to low revenue for private companies to meet their operation and capital costs.

Managing and collection of wastes requires technical-know-how and equipment which private companies in most countries do not have (Zurbruegg, 2003).

Oyedele, (2016) states that it is sometimes difficult to collect fees from polluters. In some cases, the polluters will not support the private waste management companies and sometimes the polluters refuse to pay charges. In other cases, to enforce payment, there must be enabling laws to back waste collectors to demand charges. For example, in some countries like United Kingdom, the government collects waste management fees through council tax and pays the private waste collectors. In most states of the United States of America, private waste collectors charge their clients and collect the charges directly from the clients.

Dumpsites and landfill management is also another challenge faced by private waste management companies which have in most cases become environmental problems. Management of dumpsites and landfills is better in developed countries than in developing countries. This is because developing countries lack institutional and legal framework to manage urban wastes (Wilson et al., 2009).

2.4.2 Regional Perspective

Previous studies carried out in African countries have revealed that private waste management companies are faced with challenges in provision of SWM services. In Ghana (Douti et al., 2017, Waife, 2014), in Kenya (Ngunju, 2018, Rotich et al., 2005), in Nigeria (Oyedele, 2016, Oduro-Kwarteng, 2011) and in Tanzania (Mbuligwe, 2004) pointed out challenges of financial constraints, limited number of staff especially lack of technical staff, inadequate equipment and machinery (trucks, compactors, skips, litter bins, graders and bulldozers). In addition, residents refuse to support private companies by paying for SWM services rendered to them hence companies lose out on revenue. Due to limited staff and vehicles, there has been irregular collection of wastes from clients and financial constraints have led to inadequate supply of communal containers and dustbins. Transportation of waste from the collection point to disposal sites is also major problem because of the long distance of the collection points to the disposal sites.

Other challenges include indiscriminate disposal of waste by most residents due to the lack or inadequate law enforcement to punish people who practiced indiscriminate waste disposal and bad perceptions and attitudes of some residents in relation to the local municipal waste management system. The problem of bad perceptions and attitudes of

people towards waste management could be blamed on the lack of education and knowledge on waste management issues and lack or low participation of the people in the SWM system (Wilson et al., 2009).

Infrastructure is also a challenge in developing countries which is facilitated by the lack of financial resources (Henry et al., 2006). Governments rely on external donors for financial assistance (Kurian, 2006). Bad roads are a major challenge to waste management as they cause breakdowns of waste collection vehicles leading to low collection of waste (Sandhu, 2017). Schubeler, (1996) stated that difficulties in accessing certain locations affects collection of waste. The reason might be that the areas like slums are congested which hinders easy movement of waste collection vehicles. Where accessible, the private waste management companies lack the required trucks as waste is transported using open tractors and trucks. Congestion at disposal sites has also led to low collection of waste in cities due to the longer times spent on the dump site causing few turn arounds to collect waste from the clients.

Furthermore, SWM systems have been characterized by the mostly manual handling tasks because of lack of simple tools like garbage bins needed to ably handle waste and also for collection and transportation of waste (Parrot et al., 2009 and Guerrero et al., 2013). The systems of handling waste are not effective as it is time consuming, causes scattering and dumping of waste or even burning it in open areas and also complicates the service delivery (UNEP, 2009 and Kassim & Ali, 2006).

2.4.3 Zambian Perspective

Ntambo, (2013) carried out a study on effectiveness of contracting out solid waste management and the study revealed that private waste management companies were mostly characterized with inadequate vehicles, frequent breakdown of vehicles, non-payment of services fees by clients, lack of capital to procure new equipment and insufficient finances to meet the costs of operations and maintenance of vehicles. Due to low revenue, the companies were not able to pay taxes and charges to the council as well as staff salaries. Corruption in the local councils was also pointed out, in that council staff demanded bribes from private companies in order for the companies to stay in business. The study also reported that Zambia had no specific waste management

legislation. A study by Chulu, (2017) revealed that very little was being done to ensure that the by-laws are enforced, and this was evident by the heaps of garbage seen in Waste Management Districts serviced by the private waste management companies. This research therefore, sought to fill the gap by examining the role and effectiveness of private companies in SWM by analysing the policy and legal frameworks promoting private sector participation in SWM.

Conclusion to Chapter Two

This chapter reviewed literature on solid waste management and discussed private sector involvement in SWM at global, regional and Zambian level as strategy to address the poor solid waste management situation prevailing in countries worldwide. The chapter outlined the policy and legal guidelines promoting private sector participation in solid waste management in Zambia. The chapter further discussed the various stakeholders in solid waste management and their role in solid waste management which is vital in effective waste management. Lastly, the chapter discussed challenges faced by private companies in management of solid waste.

From the literature review, previous studies did not sufficiently focus on issues influencing performance of private companies but revealed more of solid waste problems and policy issues in SWM. There is little understanding of linkages between performance of the private companies and their management practices necessary for improved service delivery. To better understand the linkages between performance of private companies and the different factors influencing performance, this study looked at First, policy and legal guidelines support private sector participation in SWM in Zambia. Second, the role of other key stakeholders in SWM in Lusaka. Third, the management practices of private companies in managing solid waste in Lusaka city (frequent and consistent waste collection by private companies, quantity of waste collected, use of appropriate waste collection vehicle and collection of service fees). Fourth, the challenges faced by private companies in management of solid waste in Lusaka city. The empirical evidence of the linkages between these four theoretical issues and the performances of the private companies would therefore, provide an understanding of the factors that may drive effectiveness of private companies or act as barriers to effectiveness of private companies. The data on performance from this study may

therefore provide a basis for monitoring performance of the private companies in the provision of SWM services in future.

The next chapter will therefore, outline the methodology adopted by the researcher in studying the research problem. It brings out the research design, study area, study population, sample size, sampling techniques, data collection tools, methods of data collection and methods of data analysis.

CHAPTER THREE: RESEARCH DESIGN AND METHODOLOGY

3.0 Introduction

This chapter looks at the various steps the researcher adopted in studying the research problem. It brings out the research design, study area, study population, sample size, sampling techniques, data collection tools, methods of data collection and methods of data analysis. Section 3.1 looks at the research design; section 3.2 the study area; section 3.3 the study population; section 3.4 the study sample size; section 3.5 discusses the sampling technique; section 3.6 delves into the data collection instruments; section 3.7 brings out the data collection procedure and time line; and section 3.8 highlights the data analysis instruments and procedures.

3.1 Research Design

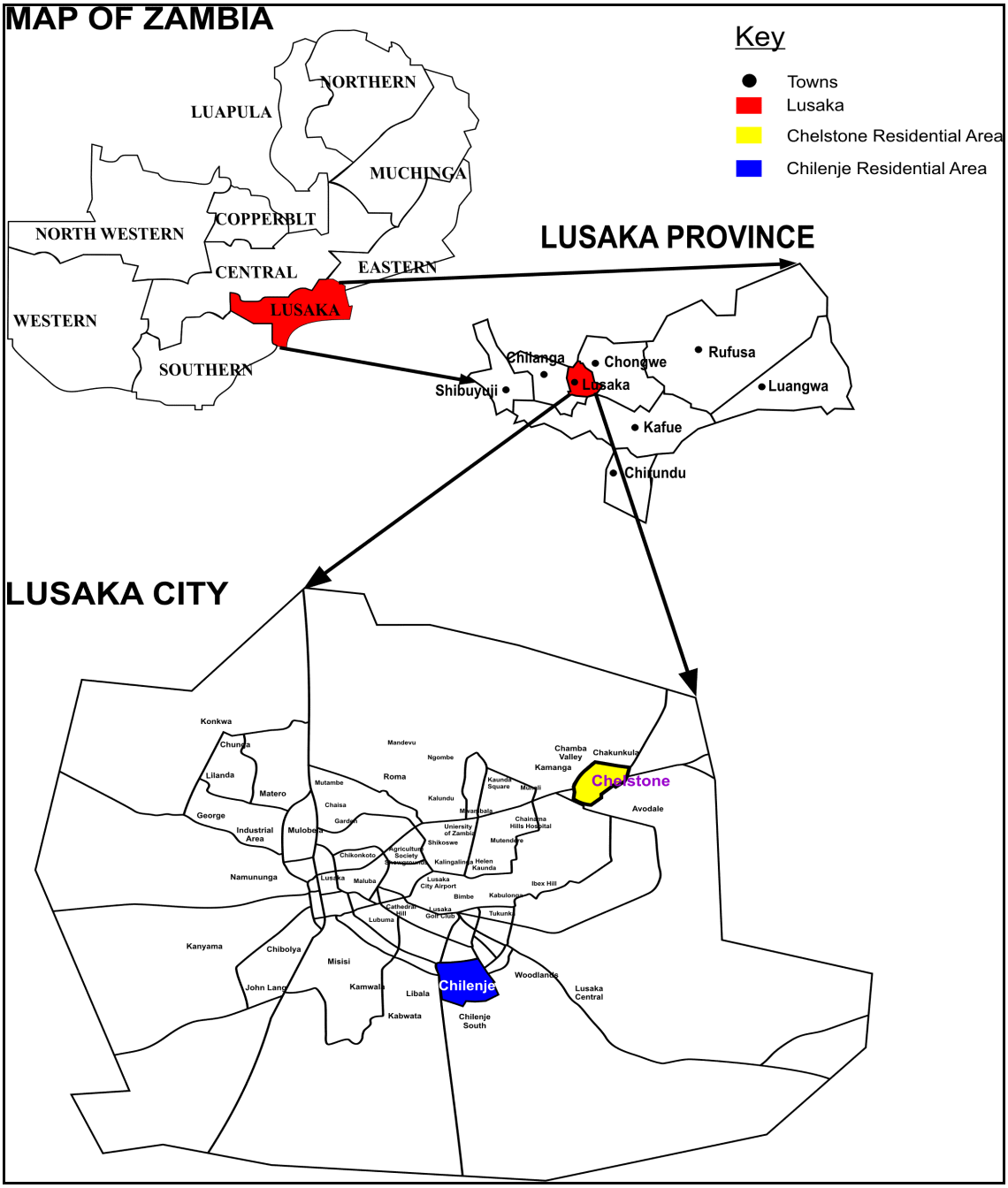
The study used a qualitative research design particularly a case study approach. A case study is a research method involving an up-close, in-depth, and detailed examination of a subject of study (the case), as well as its related contextual conditions (Starman, 2013:28). The qualitative approach places primary importance on studying small samples of purposely chosen individuals, not attempting to control contextual factors but rather seeking, through a variety of methods to understand things from the informants' points of view and creating a rich in-depth picture of the phenomenon under investigation (Creswell, 2011). This approach made it possible for the researcher to interact with the respondents and generate rich local narratives about SWM services and the role of private sector actors. The respondents were able to express themselves as freely as they wished as compared to quantitative research where respondents are restricted in responding to questions. This approach also made it possible to collect information which may otherwise not be collected due to lack of interaction (Rhee, 2004). This mostly applied when responses came as a result of soliciting or probing for more information in cases where responses were not clear. Another strength of a case study is its ability to use several sources of data such as, interviews, observations and documents. Furthermore, since a case study research design implies comprehensive and intensive study of the subject, this made it possible for the researcher to investigate and understand the effectiveness of private companies in the provision of SWM services in

Lusaka by asking the how and why questions of situations over which the researcher had little or no control. The private companies, Acka Foods and Twincare Companies were the unit of analysis for this case study.

3.2 Study Area

The study was carried out in Lusaka the capital city of Zambia. Zambia is a landlocked country found in the southern part of Africa. It has eight neighbouring countries, that is, Zimbabwe, Malawi, Tanzania, Mozambique, Angola, Democratic Republic of Congo, Namibia and Botswana. In the 2000-2010 inter-censal period, Lusaka had the highest population density of 100.1 persons per square kilometer and largest population (2,191,225) as well as the largest urban population (1,854,907) (Central Statistical Office, 2012:7-9). The increase in population of the city also comes with increase in generation of waste, which pose a challenge for the municipal authorities to deal with waste management hence poor solid waste management in the city. Chilenje and Chelstone residential areas of Lusaka were purposively selected as study areas because previous researches Dauchi (2002), Ntambo, (2013) and Chulu (2017) concentrated on private companies in the provision of SWM services in high density populated areas of Lusaka and not in medium and low-density areas. It is mostly assumed that high density areas are the only areas affected with poor SWM when in reality poor SWM exists in medium and low-density areas. The researcher had an opportunity to visit the areas prior to the study and it was seen that the areas are faced with poor SWM. Scoping works raised concerns about the way residents of medium-density areas disposed of waste and this study therefore, chose Chilenje and Chelstone medium density areas as study areas due to the poor SWM. This study was a small-scale study hence there was need to get as close as possible to representative population for the researcher to get results that could be confidently used. Therefore, future studies could focus on other areas. For the location of Lusaka on the map of Zambia, see figure 2 below.

Figure 2: Map of Zambia showing location of the Study Areas



Source: Tembo (2019)

3.3 Study Population

The target population of the study was the six private companies that had been engaged by LCC in the provision of SWM services in Lusaka; officials from Lusaka City Council- Waste Management Unit and Zambia Environmental Management Agency;

and the households of Chilenje and Chelstone residential areas. The six private companies had each an average of twenty employees involved in SWM while Chilenje and Chelstone had approximately 6,365 and 3,094 households respectively (Lusaka City Council, 2019). This population was important in generating a comprehensive picture of private sector participation in SWM and in providing rich local narratives about SWM services and the role of private sector actors, reflective of a case study design.

3.4 Study Sample Size

The study had a sample size of 32 comprising of 4 staff from Acka Foods Company, 4 staff from Twincare Company, 2 key informants from LCC 2 key informants from ZEMA and 20 households from Chilenje and Chelstone medium residential areas. The sample was comprised of senior management staff (Managing Directors) and garbage collectors for the private companies; senior and middle management officials (Director and Senior Inspector) for LCC; senior management official (Director) and an inspector for ZEMA; and household heads or their representatives who usually direct the daily handling of waste in the homes for the households. The senior management officials were purposively selected because the researcher believed that, senior management staff being decision makers would provide the data needed. Garbage collectors were selected because they were key players on the ground in relation to waste collection and the inspectors who monitored the residential areas, had first-hand information on what was happening in the study areas. Therefore, the selected respondents would provide credible information on SWM and the topic at hand. It has been previously recommended that qualitative case studies require small sample sizes of atleast a minimum of 12 to reach data saturation (Fugard and Potts, 2014, Clarke and Braun, 2013 and Guest et al, 2006). The goal of qualitative studies should be the attainment of saturation. Saturation occurs when adding more participants to the study does not result in additional perspectives or information. Therefore, a sample of 32 was deemed sufficient for the qualitative analysis and scale of this study (Morse, 1994).

3.5 Sampling Techniques

This research used a non-probability sampling design, particularly purposive sampling to select the key informants from Acka Foods and Twincare companies, ZEMA, LCC as well as households serviced by Acka Foods and Twincare companies. Purposive

sampling is where subjects are selected subjectively to represent as accurately as possible the characteristics of the population of interest (Achola and Bless, 1990). The researcher used purposive sampling as it ensured that the researcher selected a sample that was believed, based on prior information would provide the data needed. Purposive sampling ensured that only information–rich participants were included in the study. It is based entirely on the judgement of the researcher in that the sample contains the most characteristic, representative or typical attributes of the population. The key informants from private companies were purposively chosen as because they are companies that offer SWM services to the communities, while ZEMA and LCC were chosen because they are regulators and monitor operations of the private companies. Households serviced by private companies were purposively chosen because they could give factual information about the services of the companies and help determine the effectiveness of the companies.

3.6 Data Collection Instruments

Interview guides were used to collect primary data from Acka Foods and Twincare companies, LCC and ZEMA. Interview guides made it possible for the researcher to ask follow-up questions, in cases where the respondent did not give clear information in order to have detailed information on the subject matter. Questionnaires were used to collect primary data from the households which assisted to collect categorical information on the subject matter by having closed and a few open-ended questions. To ensure objectivity, reliability and validity of data, the respondents were allowed to fill in their questionnaires without inference and those that were interviewed were allowed to adequately express their views. The researcher used member checking to determine the accuracy of the qualitative finding through conducting follow up interview with key informants. The researcher also collected primary data through observations within the setting to be studied. The observations included among others, time and frequency of waste collection, state of vehicles used to collect waste, number of staff collecting waste and how households stored the waste. The researcher spent a month to work in the study area in order to present current, reliable and valid findings. The researcher was clear about observations in the report and provided detailed explanations for observations and findings of the study without prejudice. Secondary data was collected from already

existing literature such as books, journals, internet and articles which helped in carrying out a comparative analysis of its findings and already existing truths. The triangulation of data collection methods gave credibility, reliability and validity (though subjective) of the data and information collected.

3.7 Data Collection Procedure and Time Line

The researcher had an opportunity to visit the study areas prior to the study and it was seen that the areas are faced with poor SWM. Scoping works raised concerns about the way residents of medium-density areas disposed of waste and this study therefore chose Chilenje and Chelstone medium density areas as study areas due to the poor SWM. Permission to undertake the study was sought from the University of Zambia, Humanities and Social Sciences Research Ethic Committee, Acka Foods and Twincare Companies and LCC management. Data collection was carried out between September and October, 2019. The researcher administered questionnaires to selected households and administered interview guides to respondents from the private waste management companies, ZEMA and LCC. Observations were utilized to collect primary data by spending time within the study areas, observing the environment, processes, people and recording the observations.

3.8 Data Analysis Instruments and Procedures

The results were recorded and mostly textual. The analysis was done through two types of data, primary and secondary data. Secondary data provided a starting point, its data from existing documents that helped the researcher to find out what had been done and remained to be done on this particular problem (Cohen& Manion, 1994). Primary data, is the data the researcher collected through interviews, questions and observations. In this study, primary data helped bridge the gaps or weaknesses of the secondary data and it gave actual answers to the objectives of the study.

The results were analysed qualitatively using the thematic approach where written and spoken information was converted into data that could be interpreted and analysed to bring out similar themes based on the research objectives and questions. The thematic analysis provides a means of arranging and summarizing the findings from a large, varied body of research (Mays, 2005). After perusing through the data collected, the

researcher identified relevant information related to the research objectives and questions. Major topics covered were classified and put together in related categories in order to develop a coding system. A summary report was therefore developed showing the major themes and their relationship. Further, presentations of the data by use of graphics and direct quotations from the respondents and individual interviews was done. Lastly, the conclusions were made. Although qualitative research has been criticized for being subjective in the analysis of data collected, the researcher attempted to minimize the biasness. Therefore, the researcher cross checked the data from all data collection methods used to ensure reliability of the findings.

Conclusion to Chapter Three

This chapter looked at the methodology of the study and described and analysed specific research methods and techniques used for the study. It had various sections which included the research design, study area, study population, study sample size, sampling technique, data collection instruments, data collection procedure and timeline and lastly, data analysis instruments and procedures. The study used a qualitative research design particularly a case study approach. Two private companies, Acka Foods and Twincare Companies were the unit of analysis for this case. The study used purposive sampling to select key informants and household respondents. A total of 20 households were interviewed and 12 key informant interviews were conducted. Questionnaires, interview guides and observations were used to collect primary data. Secondary data was collected from already existing literature such as books, journals, internet and articles which helped in carrying out a comparative analysis of its findings and already existing truths. Data was analysed qualitatively using the thematic approach.

The next chapter will present the findings as collected from different respondents which were guided by specific research objectives and research questions. The data collected is in line with the policy and legal guidelines support private sector participation in SWM in Zambia, the role of other key stakeholders in SWM in Lusaka, the management practices of private companies in managing solid waste in Lusaka city and the challenges faced by private companies in management of solid waste in Lusaka city.

CHAPTER FOUR: FINDINGS

4.0 Introduction

This chapter presents the findings of the study from the data that was collected. The dissertation was based on a qualitative research approach. Findings were obtained using interview guides, questionnaires and secondary data. The findings were guided by the following specific research questions:

i. What policy and legal guidelines promote private sector participation in solid waste management in Zambia?
ii. What is the role of other key stakeholders in solid waste management in Chilenje and Chelstone residential areas?
iii. What management practices do Acka Foods and Twincare companies have in managing solid waste in Lusaka city?
iv. What are the challenges faced by private companies in management of solid waste in Lusaka city?

4.1 Demographic Characteristics of the Respondents

The distribution of the respondents in terms of sex was that there were eight (8) females and two (2) males from Chilenje residential area and six (6) females and four (4) males from Chelstone residential area. As for the private companies all eight (8) respondents were male and two (2) respondents from ZEMA were also male. For LCC, one (1) respondent was male and one (1) was female.

4.2 Policy and legal guidelines that promote private sector participation in solid waste management in Zambia (Research Objective I)

Objective I of this study aimed at analyzing policy and legal guidelines that promote private sector participation in solid waste management in Zambia. The main policy and legal guidelines analysed in this study were the Public Health Act Cap 295, Local Government (Solid Waste Management), Regulations, 2011, Environmental Management Act No 12, 2011 and Solid Waste Regulation and Management Act, 2018. The study showed that, these guidelines were enacted by Parliament and created an enabling environment for private actors like private companies in providing SWM services. The policies and regulations were enacted as a measure to ensure that there was

an efficient and effective solid waste management system in order to achieve a clean and quality environment and promote economic, social and cultural development. These policy guidelines authorize the local authority in this case the Lusaka City Council, to monitor and regulate the private waste management companies and other stakeholders in order to achieve a clean and healthy environment. The policy guidelines also provide for penalties for those that breach the laws and regulations. The private companies revealed that there was inadequate enforcement of SWM laws to compel citizens to have their waste collected and pay for waste collection. Below is an excerpt from one of the respondents from the private companies:

"In 2004, Waste Management District 'F' had 18, 000 households but the company only serviced 6, 000 households and Waste Management District 'G' had 8,000 households but the company only serviced 2, 000 households meaning that most households were not compelled to pay for waste collection."

With regard to the members of the public being knowledgeable about the policy and legal frameworks in place that promote private sector participation in SWM, the study revealed that members of the public in the Waste Management Districts were not aware of the policies governing operations of the private companies. With regard to information dissemination on the SWM policies by the Lusaka City Council, the findings were that only 11 out of the 20 household respondents received the information. The study revealed that the mode of acquiring information was mainly through the door to door sensitisation although 9 of the 20 household respondents were not aware of the policy guidelines.

The enforcement of By-laws was solely in the hands of the local authorities through the WMU. The local authorities were authorised to contract out SWM services to private entities but still retained the responsibility of regulating and controlling the activities of these entities (Bushra, 2000). This was the case for the Lusaka City Council where private companies engaged by the council were expected to report offending customers to the council but were not allowed to use any inappropriate ways to collect service fees or charges from customers. The companies reported that it was difficult for them to compel their clients to pay for the service rendered as the companies were expected to

report offending customers to the council. They reported that this affected their revenue base and made it difficult to procure new equipment, repair broken down equipment and pay workers their salaries.

4.3 Role of other key stakeholders in solid waste management in Chilenje and Chelstone residential areas (Research Objective II)

Objective II aimed to examine the role of other key stakeholders in solid waste management in Chilenje and Chelstone residential areas. Various stakeholders played a crucial role in SWM in the study areas such as the government agencies, private sector, general public and CBEs. The study revealed that the government had a role of providing policy and legal frameworks through legislation, regulations and other forms of mandatory arrangements. Government was supposed to provide incentives to support public and private initiatives in solid waste management.

The local authorities that is, councils were responsible for planning, organizing, executing and supervising waste management services as well as operating and management waste disposal facilities in the city. The councils were responsible for designating, operating, monitoring the management and use of waste disposal facilities as well as ensuring compliance with the waste management regulations by waste producers and waste managers within the area. The study revealed that in Lusaka city, the LCC divided the city in to sixteen (16) Waste Management Districts (WMD), and of these, fourteen (14) were managed by the private sector while two (2) which were the Central Business District and Kamwala were under LCC. The LCC engaged forty-four (44) Community Based Enterprises (CBEs) and six (6) franchise companies in waste management. Conventional and peri-urban areas in the city were being serviced by the private waste management companies and Chilenje and Chelstone residential areas were in these WMDs. The study further revealed that the LCC inspectors who had the responsibility of monitoring the private companies, carried out inspections once per quarter contrary to the By-laws which mandated them to carry out inspections on a daily basis. The LCC was also running sensitisation programs through advertisements made using public address systems and mega phones in residential areas and through posters, brochures and fliers. The sensitisation exercise was done in both English and local languages.

The private waste management companies had a role in collection, transportation, disposal and treatment of waste. A respondent from LCC reported that the state of SWM in Lusaka and study areas Chilenje and Chelstone in particular was not as bad as it was before contracting out SWM but the LCC acknowledged that there was still more to be done. It was revealed that any private company that did not perform well, had its contract terminated and those private companies that performed well had their contracts renewed.

The study also revealed that ZEMA like LCC had some programs and strategies for SWM in Lusaka and across the country. The ZEMA played a regulatory role in the management of waste in terms of collection and transportation of waste, operation of disposal sites, issuing licenses to transporters of waste and also people that operated the disposal sites. These licenses offered conditions such as what waste collectors were expected to do and what kind of equipment they were expected to use. It was also revealed that ZEMA carried out random inspections especially on weekends to check for issues of illegal disposal of waste. The people targeted were the residents and waste collectors who illegally dumped waste in residential areas. They also responded to calls from residents who reported people who illegally dumped waste in residential areas. In addition, ZEMA provided technical support to local communities who had waste management activities in their localities. In doing this, ZEMA also carried out awareness campaigns, waste management projects done through media programs and worked with other organizations that dealt with issues of waste. ZEMA was also working with institutions such as schools so that they could put environmental issues in the school curriculum on matters of waste management.

Residents had a role in waste management that is, to ensure that they maintained and promoted hygiene and cleanliness by managing solid waste at source by storing in bins, paying for waste collection and reporting the inefficiencies of private companies to the councils as well as getting involved in community waste management programmes. However, the study revealed that most residents defaulted in paying waste collection fees.

As for other stakeholders like CBEs, their role was taking part in primary collection, street cleaning, education of communities, advocacy for a clean environment and supporting of waste management initiatives. With regard to carrying out awareness programs, it was reported that CBEs mainly collected the waste and did very little of information dissemination concerning waste management.

4.4 Management practices that Acka Foods and Twincare companies have in managing solid waste in Lusaka city (Research Objective III)

Objective III of this study aimed at determining SWM management practices by private sector actors particularly Acka Foods and Twincare companies. In this study, the management practices of private companies included frequency of waste collection, consistency of waste collection, quantity of waste collected, types of waste collection vehicles and collection of service fees.

4.4.1 Frequency of waste collection

The study sought to find out the frequency of waste collection by private companies. The Lusaka City Council (Municipal Solid Waste Management) By-Laws, (2004), states that a waste manager shall operate in accordance with a licence to transport waste issued by the former Environmental Council of Zambia (now called ZEMA); and within the boundaries of the WMD in respect of which the waste manager has concluded a SWM contract with the Council. Waste managers who include private companies were required to collect waste from households on a weekly basis as per the SWM contract with the council. According to the questionnaire data, most household respondents (15 out of 20) indicated that the companies collected waste weekly and the rest indicated that the companies collected waste monthly. The respondents from the private companies reported that they collected waste from households on a weekly basis and every two weeks from markets or when clients called the companies to inform them that the bins were filled up.

4.4.2 Consistent waste collection

The study aimed to find out the consistency of waste collection by private companies and the majority of household respondents (12 out of 20) indicated that the private waste management companies were not collecting waste on specific days in accordance with

the agreed schedule and whilst the remainder stated that the companies collected waste as agreed. According to the household respondents and key informants from the private companies, the private companies were not able to collect waste on specific days due to lack of efficiency attributed to man power and the lack of transport respectively. Household and LCC rrespondents showed that consistency in the collection of waste was affected by three elements:

a. Lack of man power: This was defined as companies not having enough workers to collect garbage or waste;
b. Lack of transport: here respondents argued that private companies did not have adequate transport to collect waste from households; and
c. Negligence and poor work culture.

4.4.3 Quantity of waste collected

With regard to quantity of waste collected, the majority of household respondents (11 out of 20) indicated that there was a limit of waste that the private companies were supposed to collect from households and that the private companies collected at least 2 x 25kg bags or 240 litre bin per collection. The other household respondents indicated that the companies did not set limits as they would just collect waste available on the day set for the collection. Some household respondents indicated that they would want the private companies to increase the limit of waste to be collected while others were comfortable with the limit as they didn't have much waste to dispose off. The former indicated that they would want an increase in the limit because of rare cases that may arise such as waste increasing due to hosting of parties, funerals and church gatherings. Below is an excerpt from a household respondent:

"The private companies should increase the limit of waste to be collected because there are times when we have less garbage than what they company is supposed to collect but when we have excess garbage due to holding of family functions like parties, the companies still charge us for the extra garbage which is not fair to us."

According to the respondents from private companies, the limit of waste to be collected per household per week was 240 litres as per contract with the LCC but the companies still collected excess waste after collecting extra money for the excess garbage.

However, household respondents indicated that excess garbage was collected by the private companies after entering into informal deals with drivers. When asked to indicate an estimate of the size of waste in tonnes collected and disposed of per week, one company indicated that they were collecting between 3-4 tonnes and the other indicated 68 tonnes per week.

The respondent from LCC reported that private companies were required to collect 240 litres of waste per household as per the contract agreement with the council. She also indicated that the level of waste collected and disposed off at the designated dumpsite in Chunga by private companies was fluctuating: In 2013 was 7,774,960 Kgs, in 2014- 8,442,232 Kgs, in 2015- 9,307,870 Kgs, 2016 7,326,344 Kgs and 2017- 8,442,232 Kgs. She further reported that the records at Chunga dumpsite revealed that the garbage collected and disposed of by LCC alone at the dumpsite was much more than that collected by a number of private companies.

4.4.4 Use of appropriate waste collection vehicles

Regarding the type of vehicles the private companies used to collect waste from the households, the majority of respondents (15 out of 20) said the companies were mostly using open trucks, one (1) respondent revealed that the private companies were using open vans, four (4) of the respondents said the companies were using tippers. This was contrary to the Local Government (Solid Waste Management) Regulations, (2011), which state that waste managers shall use only equipment approved by the Zambia Environmental Management Agency which include: a compactor, tipper truck and a skip truck. When asked to determine if the waste collected was secured to avoid spillage, the majority of respondents (18 out of 20) revealed that the waste was secured whilst the remaining 2 respondents stated otherwise. In addition, when asked to indicate the number of vehicles used for solid waste collection and disposal in the firms and if the vehicles were owned by the company or hired, the respondents from the private companies revealed that all the vehicles were owned by the companies and one of the private companies owned three (3) vehicles all rigid trucks and the other owned five (5) vehicles that is, 3 tippers, and 2 rigid trucks. Below is an excerpt from a respondent from a private company:

"The company owns three rigid trucks which are used for garbage collection."

Another respondent from another private company indicated that:

"Our company has three tippers and two rigid trucks which are all owned by the company."

The findings revealed that the companies did not have all the key machinery and equipment for waste collection and disposal as per statutory requirement.

4.4.5 Collection of service fees

With regard to collection of services fees, the companies indicated that they were collecting between K60- K120 for domestic premises and K150-K300 for business entities as prescribed by the LCC. The respondents further indicated that the clients were paying monthly for the services that is, after the service was rendered to them but only one client paid before the service was rendered to her. The companies stated that they were experiencing difficulties in collecting fees from most of their clients as the clients wanted to pay after receiving the service from the companies. Below are excerpts from key respondents from the private companies:

"Most of our clients fail to pay after the service is rendered to them and others relocate to other areas before paying the fees. This is because the company has a credit facility arrangement which requires us to provide a service first and collect the fees from the client at the end of the month."

Another respondent stated that:

"Some clients change service providers without informing the company making it impossible to collect service fees"

This is despite the majority of respondents who described the service fees as affordable and a few respondents indicated that the companies were overcharging in terms of the subscription fees.

Figure 3: Garbage thrown in open areas

Source: Author's field work 2019

Figure 4: Burnt garbage in the surrounding areas

Source: Author's field work 2019

4.5 Challenges faced by private companies in management of solid waste in Lusaka city (Research Objective IV)

The objective was to analyse the challenges faced by private companies in management of solid waste in Lusaka city. The objective was very important and saved as a backbone for the other objectives. Knowing the challenges was important as it could help to know how to address them.

The household respondents and key informants from LCC and ZEMA were asked to provide their perception on some of the challenges that the private companies faced in management of solid waste and the majority revealed that there were complaints from the private companies about inadequate transport, frequent breakdown of vehicles, delays in payments by some residents and some completely avoiding paying the subscription fees after receiving the service.

According to the LCC inspector, there was also an influx of illegal waste collectors in the WMDs assigned to the companies and some residents did not want to subscribe for waste collection hence the private waste management companies had a few clients and their revenue base was low. The inspector stated that there were laws in place that prohibited people from indiscriminate waste disposal but people were not sensitive enough to these laws and as a result there were challenges which led to the dumping of waste anywhere and mostly in the night.

The private waste management companies cited several challenges that they faced such as:

i. Invasion of illegal collectors in the areas where they operated from and the illegal collectors who were charging lower service fees which made them more favourable to the residents as opposed to the private companies whose fees were within the tariffs prescribed by the council. The respondents from the private companies indicated that since illegal collectors were not registered, they did not dump the waste they collected at the designated dumpsite in Chunga, they instead dumped such waste anywhere. The private companies made formal complaints to LCC but no action had been taken.

ii. The respondents from the private companies indicated that they had a lot of clients who defaulted in paying the service fees and some clients relocated to other areas after receiving the service hence private companies lost out on revenue.

iii. The respondent from the private companies also indicated that there was a challenge with the compactor at Chunga dumpsite which the respondents said had broken down 5 years before the time of the interview. This was contributing to the landfill getting filled up as there was no equipment to compact the waste. As a result, the dumpsite was being congested with a lot of vehicles trying to dispose off the waste. The landfill which was commissioned in 2004 was designed to operate for about 25 years but it had only been operational for about 15 years.

iv. Other challenges raised by the private companies were lack of access to capital to start up, repair and maintain vehicles and equipment hence having few vehicles for operations.

v. Fixed tariffs prescribed by LCC that is, K60- K120 for households and K150- K300 for commercial entities posed a challenge for the private companies considering the distance to the dumpsite. The tariffs had not been revised since 2006.

vi. There were also concerns raised over the high cost of maintenance of servicing vehicles vis-à-vis the low service fees charged to the clients as private companies had to operate within the tariff fees prescribed by the LCC.

vii. Some Waste Management Districts (WMD) were far from the dumpsite and having a fixed tariff posed a challenge for the private companies in terms of fuel and operational costs.

viii. Another challenge was that there was no weigh bridge at the dumpsite hence dumpsite managers determined how much a company was supposed to pay for disposing off waste just by looking at how much waste the vehicle was carrying. The private companies were of the view that they were being over charged.

ix. The man-hours were also affected because of the bad roads which caused congestion and delayed work hence turn arounds had reduced. Work that was expected to be done in 4 hours was done in about 8- 10 hours.

x. The other challenge was that vehicles imported for waste collection which were usually second hand, old models and were not suitable for the local environment

hence not very effective. Some of the vehicles were designed to collect waste like paper in their country of origin but were used to collect heavy waste like logs here in Zambia.

xi. The private companies also revealed that there was inadequate enforcement of SWM laws to compel citizens to have their waste collected and pay for waste collection. Below is an excerpt from one of the respondents from the private companies:

"In 2004, Waste Management District 'F' had 18, 000 households but the company only serviced 6, 000 households and Waste Management District 'G' had 8,000 but the company only serviced 2, 000 households meaning that most households were not compelled to pay for waste collection."

Conclusion to Chapter Four

This chapter looked at the findings of the study as collected from different respondents which were guided by specific objectives. The data collected is in line with the policy and legal guidelines promote private sector participation in SWM in Zambia; the role of other key stakeholders in SWM in Lusaka; the management practices of private companies in managing solid waste in Lusaka city; and the challenges faced by private companies in management of solid waste in Lusaka city.

The next Chapter will discuss the findings of the study presented in the previous chapter four in line with the study specific objectives. The discussion of the findings will highlight similarities between the drawn findings and those of the empirical literature.

CHAPTER FIVE: DISCUSSION OF THE FINDINGS

5.0 Introduction

This chapter discusses the findings of the study presented in the previous chapter four in line with the study specific objectives and research questions. The discussion of the findings will highlight similarities between the drawn findings and those of the empirical literature.

This study argues that private sector participation in SWM in Zambia remains low and less effective. Private sector participation in SWM and their effectiveness has been affected by diverse factors – internally and externally. The study shows two internal and external elements. The first is that internally, the study showed that private companies lacked appropriate machinery for solid waste collection. The second is that external factors included poor client compliance in payment of service fees which was affected by lack of awareness of the dynamics of SW collection in the areas. The poor client compliance in paying service fees affected the companies' revenue base. Therefore, companies could not afford to procure appropriate equipment and repair the broken-down equipment/ machinery. Some of the consequences have been infrequent and limited collection of waste by private companies. In what follows, wider implications of this study are discussed.

5.1 Policy and legal guidelines that promote private sector participation in solid waste management in Zambia

The study aimed to examine the policy and legal guidelines promoting private sector participation in solid waste management in Zambia. The findings established that the legislation governing solid waste collection were enacted by Parliament to create an enabling environment for private actors like private companies in providing SWM services. The findings established that private companies were contracted by the Lusaka City Council Waste Management Unit (WMU) through the use of appropriate procurement procedures, on a competitive basis, in accordance with the Public Procurement Act, 2008. According to the Local Government (Solid Waste Management) Regulations, (2011), the private companies operated in accordance with a licence to transport waste issued by the Zambia Environmental Management Agency. The

companies operated within the boundaries of the waste management district assigned to them through franchise agreements contract and were expected to uphold the franchise conditions (Ibid). The WMU publishes in the Gazette and in daily newspapers of general circulation in the area, for three consecutive days, the fees which are to be charged by waste managers which are solid waste management fees (Local Government (Solid Waste Management) Regulations, 2011). The companies were expected to use only equipment approved by the Agency but the study found that the private companies did not have all the necessary equipment for waste collection and transportation which are a compactor, tipper truck and skip truck. This was in line with the studies in Zambia and Kenya by Ntambo (2013) and Ngunju (2018) respectively who reported that private companies did not have all the required equipment but had canters and lorries.

This study also revealed that despite the policy guidelines been in place, it appeared that not much was being done to ensure that the By-laws were enforced. This was evident by the poor SWM in Waste Management Districts where private companies operated from. The findings are in agreement with the study in Nigeria by Oduro-Kwarteng (2011) who reported that most cities of Nigeria were experiencing indiscriminate dumping of waste despite having SWM policies in place.

Further, policy documents such as the Local Government (Solid Waste Management) Regulations, 2011 and Solid Waste Regulation and Management Act, 2018 stipulated that the WMU inspectors were required to undertake random inspections of waste management districts (WMD) and waste management zones in which private companies were assigned. The findings revealed that inspectors carried out inspections once per quarter contrary to the By-laws as inspections were expected to be carried out on a daily basis. This compromised the effectiveness of the service provision by private companies because illegal collectors could not be easily curtailed if inspections were carried out on a quarterly basis.

With regard to the information dissemination on SWM policies, the study revealed that the public were not aware of the policies promoting operations of the private companies in SWM meaning information dissemination by the LCC and ZEMA was not adequate. The findings are in agreement with Ngunju (2018) who reported in a related study in

Nairobi County of Kenya that the general public did not have information on the policies supporting operations of the private companies in SWM. Therefore, there was need for the LCC to undertake aggressive sensitisation in the WMD on policies supporting SWM. From the analysis it seems the ways in which the information was disseminated through awareness campaigns on waste management was not very effective. The LCC could consider changing their strategies like putting people's attitudes in consideration during campaigns that aim at attitudes and perceived norms in order to have better outcomes or results.

The findings on the policies and legal guidelines promoting private sector participation in solid waste management in Zambia are in agreement with previous studies by Oduro-Kwarteng, (2011), Ntambo (2013), Chulu (2017) and Ngunju (2018) who reported that there was inadequate enforcement of policies and regulations supporting private companies participation in SWM. This was evidenced by the indiscriminate dumping of waste in areas where the private companies operated from.

One of the weakness of the policies and legal frameworks in place is that they are a 'one size-fits-all' approach. The policy guidelines were too general without being specific to divergent human settlements, e.g. to low, medium and high density residential and business areas. Local authorities could consider developing policy guidelines that could be specific to divergent human settlements.

5.2 Role of other key Stakeholders in Solid Waste Management in Chilenje and Chelstone Residential Areas

The study aimed to analyse the role of other key stakeholders in SWM in the study areas. It was vital to also discuss the role of other key stakeholders like the local authority (Lusaka City Council), government agency (Zambia Environmental Management Agency), residents and private sector in SWM in Lusaka and study areas in specific. Major themes were coming out clearly during the analysis of the data and these were what the current status of waste management is in Lusaka, the programs and strategies in existence for SWM and challenges faced by key stakeholders in carrying out SWM activities. The key stakeholders LCC and ZEMA acknowledged that SWM remained one of the major challenges Lusaka city was facing. On the other hand, with

programmes such as the “Make Zambia Clean, Green and Healthy Campaign” it was reported that there was improvement when it came to waste management. However, issues of indiscriminate waste disposal or illegal disposal of waste was still prominent. Therefore, the stakeholders had put up some programmes by using different kinds of strategies to deal with the problem of waste management.

The LCC engaged private companies in the provision of SWM services who had a role in collection, transportation, disposal and treatment. They also carried out awareness campaigns on SWM. A respondent from LCC reported that the state of SWM in Lusaka and study areas Chilenje and Chelstone was not as bad as it was before contracting out SWM to the private sector but the LCC acknowledged that there was still more to be done.

The motivating factor for doing this study was the fact that, despite LCC, ZEMA and private companies carrying out awareness campaigns in the city, the study revealed that some people just chose to throw the waste in the streets and open areas. It was a wonder that why should there be poor waste management despite the massive awareness campaigns around Lusaka city and the country in general. The findings are in agreement with the study carried out in India by Sandhu (2017) who reported that Indian cities were still experiencing indiscriminate dumping of waste in open areas despite the awareness campaigns by the local authorities. The LCC and ZEMA involved in doing the awareness campaigns or information dissemination were merely providing information to the intended targets. From the analysis, it seemed the ways in which the information was disseminated through awareness campaigns on waste management was not very effective. The LCC and ZEMA could consider changing their strategies like instead of using print media, radio and television, they should start going to the residential areas or communities physically and start carrying out awareness activities through drama and films in local languages. This is because not everyone is able to read or buy newspapers and not everyone owns a television or radio. Therefore, going to the communities would make the awareness campaigns more interesting and effective especially if drama performance and local films depict their local environment. People’s attitudes should also be put into consideration in campaigns that aim at attitudes and perceived norms in order to have better outcomes or results. The ZEMA and LCC should not merely provide

information but need to focus on people's attitudes. In doing this, they should be able to know which beliefs to change and in that way the information being disseminated would be effectively received and be able to change people's behaviours for the better.

From the information given by the LCC and ZEMA respondents, problems of finances, inadequate vehicles and human resource were common to LCC and ZEMA but their major concern was the negative attitudes of the public. There was too much indiscriminate disposal of waste. As earlier mentioned, ZEMA was involved in random inspections around the residential areas to see to it those that illegally dumped waste were caught. The random inspections were constrained by inadequate manpower and limited funds. ZEMA had few inspectors that is, forty-five (45) inspectors to carry out its tasks and out of the ten provinces, ZEMA only had offices in five provinces meaning that the impact of the inspections might not be felt as the areas covered were limited. This same challenge was also faced by the LCC which had few waste management inspectors that is, seven (7) inspectors in its Waste Management Unit (WMU) to carryout inspections. As for the LCC, their main hope lied in "the polluter pays principle" which stated that if you pollute you had to pay. The By-laws in place allowed for offenders to be prosecuted for illegally dumping or refusing to subscribe to the system by paying waste collection fees.

The findings revealed that the LCC inspectors carried out inspections once per quarter contrary to the By-laws as inspections were expected to be carried out on a daily basis and this compromised the effectiveness of the service provision by private companies because illegal collectors could not be easily curtailed if inspection were carried out on a quarterly basis. Monitoring inspections by ZEMA and LCC should be carried out daily and not on a quarterly basis as the study revealed. This could help to curb illegal dumping of waste and influx of illegal waste collectors. Due to lack of resources, enforcement and sensitisation of SWM laws and regulations could not be fully implemented. The LCC and ZEMA should consider finding ways of sourcing funds in order to effectively carry out monitoring inspections. In addition, they should involve the residents and public at large in coming up with their awareness programs so that they fully own them since they are the ones who know what is best for them.

From the residents' point of view, there was need for residents to start seeing themselves as being responsible for the waste that they generate. They were expected to play their role in waste management by ensuring that they maintained and promoted hygiene and cleanliness by managing solid waste at source by storing in bins, paying for waste collection and reporting the inefficiencies of private companies to the Councils as well as getting involved in community waste management programmes. However, it was revealed during data collection that some households did not have knowledge of the private companies in their areas hence their low participation in SWM.

As for CBEs, whose role among others was taking part in primary collection, street cleaning, and education of communities, mainly collected the waste and did very little of information dissemination in the communities concerning waste management. This meant that there was inadequate sensitisation in the residential areas hence the low participation of residents in SWM activities. Other stakeholders like NGOs and CBOs needed to take part in community programmes on waste management. In order to promote inclusive participation by stakeholders in SWM, there is need to enforce SWM laws that promote private sector participation in waste management. This would make them want to take part in all waste management activities.

The findings on the role of other stakeholders in SWM are in agreement with Oduro-Kwarteng (2011), Ntambo (2013) and and Chulu (2017) who reported that Government agencies have roles of issuing licenses and monitoring operations of private companies and ensure households have their waste collected. They are also supposed to provide information and awareness on good practices of SWM or waste disposal to the residents. With regards to households, they have a role of segregating waste and paying for waste collection.

5.3 Management Practices that Acka Foods and Twincare Companies have in managing Solid Waste in Lusaka city

The study sought to determine the management practices that Acka Foods and Twincare companies have in managing solid waste in Lusaka city which included frequency of waste collection, consistency of waste collection, quantity of waste collected, types of waste collection vehicles and collection of service fees.

Most household respondents indicated that the companies collected waste weekly and the rest indicated that the companies collected waste monthly. It was reported that the companies collected waste from the client's homes and others indicated that they were utilizing the communal bins placed in strategic locations by the private companies. The findings are supported by Ntambo (2013) who reported that private companies collected waste on a weekly basis and on special arrangements.

Most respondents also indicated that the private waste management companies were not collecting waste on specific days in accordance with the agreed schedules. This was one of the reasons why there is indiscriminate disposal of waste in the study areas since the households decided to throw the waste in the open areas when their bins got filled up. Companies were inconsistent in waste collection. They attributed the inconsistency to the challenge of low revenue collection as a result of clients delaying in paying for the services, therefore the companies could not procure and repair vehicles/machinery for to enable collect waste efficiently. It was suggested that LCC and ZEMA should sensitise citizens on the existing SWM laws and enforce the laws in order to compel citizens to take part in SWM activities by having their waste collected, paying for waste collection and reporting offenders to LCC and ZEMA. The findings are in line with studies in Zambia and Kenya by Chulu (2017) and Ngunju (2018) respectively who reported inconsistent collection of waste by private companies which brought about poor SWM in cities. When asked if the companies were communicating in case of any delays in collecting waste, the respondents indicated that communication was made by the companies to the clients in cases of delays and the companies made up by collecting the waste on another day.

The study findings revealed that the level of waste collected and disposed off by private companies at the only designated dumpsite in Chunga was fluctuating. The LCC respondent indicated that the records at Chunga dumpsite revealed that the garbage collected and disposed of by LCC alone at the dumpsite was much more than that collected by a number of private waste management companies. This shows that whilst there was potential for private sector actors to participate in SWM, but their participation was still very low, placing a huge burden on LCC. The low level of waste collected and disposed off meant that some companies were disposing off waste somewhere else or

were not just collecting waste from some households. The LCC respondent mentioned that the low levels of waste disposed off could be attributed to the companies avoiding paying the tipping fee at the dumpsite for every drop off which was K50 for 1- 5 tonnes of waste, K100 for 6-10 tonnes of waste and K150 for waste above 10 tonnes. Fees levied such as these could discourage private companies and compel them to dispose off waste in open areas. It was also suggested that LCC and ZEMA should sensitise citizens on the existing SWM laws and enforce the laws in order to compel citizens to pay for waste collection to enable the companies improve their revenue base and procure the required vehicles for waste collection and repair broken down vehicles and machinery.

The companies also reported that they were failing to collect waste sometimes because of the dumpsite which was almost filled up leading to congestion at the dump site. This affected the turnarounds of companies to go collect more wastes from the households. It was suggested that the LCC should consider constructing another dumpsite in order to decongest the current and only dumpsite, Chunga which would improve the companies' turnarounds and collect more waste. The findings are supported by Douti et al. (2017) who reported poor management of dumpsites and landfills in Ghana.

The majority of respondents reported that the companies were mostly using open trucks and tippers. This was contrary to the key machinery and equipment that is, a compactor, tipper truck and a skip truck that each company was supposed to have as per requirement. The findings are in line with the studies in Zambia and Kenya by Ntambo (2013) and Ngunju (2018) respectively who reported that private companies did not have all the required equipment and machinery for waste collection hence the low collection of waste. The companies not having the required equipment could be contributing to the low levels of waste collection by the private companies as they did not have all the key equipment and machinery to collect and dispose off waste. It was also suggested that LCC and ZEMA should enforce SWM laws in order to compel citizens to pay for waste collection to enable the companies improve their revenue base and procure the required vehicles for waste collection. Thereby, improve the levels of waste collections in WMDs. In addition, it was suggested that financial lending institutions should consider offering low interest loans to private companies in order for them to have access to finances which would enable them procure the required waste

collection vehicles and equipment and improve their service delivery. However, it was reported that quite often the waste was secured by the private companies to avoid spilling. This suggests that the private companies responsible for collecting the waste in the study areas brought positive change to the communities regarding cleanliness.

With regard to collection of service charges, the study revealed that companies had challenges in collecting the fees from clients as some of the clients wanted to pay after receiving the service from the companies and some clients relocated to other areas before paying the fees. The findings were in line with studies by Oyedele, (2016) and Douti (2017) in Nigeria and Ghana respectively who stated that it was sometimes difficult to collect fees from clients after they received the service. This affected their operations due to low cash flow. Companies should consider collecting fees before providing the service as opposed to collecting fees after offering the service as it could help in not having defaulting clients. The study results also revealed that the majority of the respondents did not have written contracts with any waste management company despite the information from the private companies suggesting that the contracts between them and the residents were written. The findings revealed that 3 respondents had written contracts and 8 of the respondents had verbal contracts and the remainder 9 of the respondents did not have any contracts with any of the companies. This could be one of the reasons why some clients defaulted in paying service fees as there were no written contracts between them and the companies, hence they did not fear being prosecuted for defaulting in paying the service fees. The presence of illegal waste collectors who offer solid waste collection services at a lower fee as compared to private companies who are formally contracted by the council could also be a reason for the residents failing to pay service fees. The companies reported lack of enforcement of SWM laws as a cause for refusal by some households to pay for waste collection so the company was unable to compel them to have their waste collected. It was suggested that Government should sensitise citizens on the existing SWM laws and enforce the laws in order to compel citizens to take part in SWM activities by having their waste collected and paying for waste collection.

The waste collection financing was not sustainable as not everyone was willing to pay for waste collection, therefore, the Government should consider exploring ways of

embedding waste collection fees in utility bills such as water or electricity. It is expected that such a payment system would increase the number of people paying for waste collection and therefore contribute to a cleaner environment. This would be in line with the Solid Waste Regulation and Management Act, 2018 which states that "a local authority, solid waste management company, licenced solid waste service provider or registered operator may establish a billing system, specifying billing periods, for purposes of solid waste services or solid waste management."

Similar to the findings by Lori (2017), the study revealed that Chicago residences were receiving garbage collection services from both the State or city council and private firms and were paying a garbage fee of $9.50 per month per dwelling unit. The fee was covering for a portion of the costs associated with weekly garbage collection services provided to these residences. Chicago residents living in buildings with five or six dwelling units paid a private garbage hauler on average $10 to $16 per unit per month for private garbage removal. Further, the council's garbage fee of $9.50 was comparatively lower than the average fees paid by residents of surrounding suburbs.

This study confirms the findings of previous studies done in African countries in Tanzania (Kassim, 2009), in Nigeria (Oduro-Kwarteng, 2011) and in Kenya (Mwangi, 2013) which reported that private companies collected waste weekly, did not collect waste on specific days, did not have the required or key equipment and machinery and companies had difficulties in collecting fees from clients which led to low collection of waste and ultimately, poor performance of private waste management companies.

5.4 Challenges faced by private companies in management of solid waste in Lusaka city

The study sought to analyse the challenges faced by private companies in SWM in Lusaka city. The private companies in Lusaka faced a number of challenges as they tried to carry out their tasks effectively. With regard to paying for waste collection services, residents had been defaulting in paying despite the Lusaka City Council (Municipal Solid Waste Management) Regulations of 2004, which states that "a waste producer shall use the solid waste management system established by the council where such system is in operation upon payment of a solid waste collection fee (Lusaka City

Council (Municipal Solid Waste Management) Regulations of 2004). This led to private companies losing out revenue and failing to carry out their work effectively since they also needed to pay workers' salaries, fees such as tipping fee at the dump site and also pay franchise fees to LCC. It was suggested that LCC should enforce SWM laws in order to compel citizens to pay waste collection. The findings are in support of the studies by Ntambo (2013) and Chulu (2017) who reported that most Lusaka residents defaulted in paying the service fee for waste collection and this affected the revenue of private companies.

During the observation in the study areas, it was seen that the private companies' workers did not have protective clothing like gumboots or gloves to wear when handling waste instead they used their ordinary foot wears and bare hands. This was contrary to the By-laws, the Local Government (Solid Waste Management) Regulations, 2011 which state that all waste managers shall "provide all employees engaged in solid waste management services with appropriate protective clothing". In addition, they used manual handling tasks in waste collection which was time consuming. The findings were in agreement with the studies by Kassim & Ali (2006) and Guerrero et al. (2013) who reported that workers of private companies did not have protective clothing and that the manual system of handling waste was not effective as it was time consuming, caused scattering of waste in open areas and also complicated the service delivery.

From the information given by the respondents, challenges such as those of lacking capital to start up, buying and maintaining vehicles and equipment, inadequate vehicles, influx of illegal waste collectors, defaulting clients, inadequate enforcement of SWM laws, long distances from WMDs to the dumpsite and poor infrastructure were common to private companies but the companies' major concern was the negative attitudes of the public. There was too much indiscriminate disposal of waste. The findings were in line with the study carried out in India by Sandhu (2017) who reported that Indian cities were still experiencing indiscriminate disposal of waste in vacant lots and open areas despite the awareness campaigns by the local authorities. Just as the research suggests that as long as people's attitudes do not change no matter how much investment was made in waste management, poor SWM may continue. This is so because as much as waste was collected from the street, it meant the companies' efforts would be in vain. The

respondents from the companies also reported that most of the waste that was thrown on streets or in open areas should not end up there because some of it could be reused or recycled. On the other hand, they reported that residents had continued not to be supportive in cases where waste could be disposed off properly. For example, despite people being told to dispose off their waste in bins, they had continued to throw waste on the ground and not in bins and this was confirmed when the researcher made observations in the residential areas. It was therefore, suggested that LCC and ZEMA should sensitise citizens on the existing SWM laws and enforce the laws in order to compel citizens to take part in SWM activities by having their waste collected, paying for waste collection and reporting illegal waste collectors to the LCC and ZEMA. With regard to the challenges of inadequate finances and equipment, it was suggested that financial lending institutions should consider offering low interest loans to private companies in order for them to have access to finances which would enable them procure and repair equipment/ machinery and improve their service delivery.

This study confirms the findings of previous studies in African countries that private companies face numerous challenges in SWM. In Nigeria (Sanusi, 2010), in Ghana (Douti et al., 2017) and in Kenya (Ngunju, 2018) reported major challenges faced by private companies among them being: financial constraints, negligence by some residents in managing waste, low levels of compliance to pay by households, presence of illegal waste collectors, long distances from collection points to the dumpsite. In Zambia (Ntambo, 2013) also reported fixed tariffs prescribed by the council.

Conclusion to Chapter Five

This chapter discussed the findings of the study in line with the study research questions. This study argues that private sector participation in SWM in Zambia remains low and less effective. Private sector participation in SWM and their effectiveness has been affected by diverse factors – internally and externally. The study shows two internal and external elements. The first is that internally, the study showed that private companies lacked appropriate machinery for solid waste collection. The second is that external factors included poor client compliance in payment of service fees which was affected by lack of awareness of the dynamics of SW collection in the areas. The poor client compliance in paying service fees affected the companies' revenue base. Therefore,

companies could not afford to procure appropriate equipment and repair the broken-down equipment/ machinery. Some of the consequences have been infrequent and limited collection of waste by private companies. Further, the study revealed that the LCC and ZEMA whose roles among others was to monitor the companies and WMDs, conducted monitoring inspections quarterly and not on a daily basis as per the By-laws. Furthermore, the study revealed that some of the challenges faced by private companies in SWM included financial constraints, inadequate vehicles, low levels of compliance to pay by households, influx of illegal waste collectors and inadequate enforcement of SWM laws. The next chapter highlights the conclusion and recommendations to the study in line with the results attained.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.0 Introduction

This chapter will highlight the conclusion and the recommendations to the study in line with the results attained. The recommendations raised may help the stakeholders devise measures that may help the private waste management companies improve on their service delivery as well as help other stakeholders to improve on their planning, development and implementation of sustainable strategies for better management of solid waste.

6.1 Conclusion

The main aim of the study was to assess the effectiveness of private companies in the provision of solid waste management services in Lusaka city focusing on Acka Foods and Twincare companies which operate in in Chilenje and Chelstone medium density residential areas.

The findings were guided by four specific research objectives. First, with regard to research objective one, to examine the policy and legal guidelines promoting private sector participation in solid waste management in Zambia. The findings were that there was inadequate enforcement of policies and regulations supporting private companies' participation in SWM. This was evidenced by the indiscriminate dumping of waste in areas where the private companies operated from.

The second research objective two was to examine the role of other key stakeholders in solid waste management in Chilenje and Chelstone residential areas. The findings showed that other key stakeholders in SWM included the LCC and ZEMA who had roles of sensitising the public on SWM activities, issuing licenses to waste collectors and monitoring their operations. The study revealed that LCC and ZEMA both had challenges such as inadequate finances, vehicles and human resource to undertake their duties. Households were also a major stakeholder who had the responsibility of maintaining and promoting hygiene and cleanliness by managing solid waste at source by storing in bins, paying for solid waste collection and reporting the inefficiencies of private companies to the Councils as well as getting involved in community waste management programmes. However, there was low participation of households in SWM

activities. As for CBEs, they had a role among others of taking part in primary collection, street cleaning, and education of communities but did very little of information dissemination in the communities concerning waste management.

The third research objective three was to determine the management practices that Acka Foods and Twincare companies have in managing solid waste in Lusaka city. It was found out that the private companies were not consistent in providing SWM services to their clients and the level of waste collection from the households was low which posed environmental and human health challenges. The private companies did not have the required equipment and machinery for waste collection and disposal hence the low collection of waste. In addition, most of the residents who subscribed for the SWM services defaulted in paying subscription fees hence affecting the revenue base of the companies and their operations.

The fourth research objective four was to analyse the challenges faced by private companies in management of solid waste in Lusaka city. The findings showed that private companies faced challenges such as lack of capital to start up, buy and maintain vehicles and equipment, inadequate vehicles, defaulting clients in paying for waste collection, influx of illegal waste collector, inadequate enforcement of SWM laws, poor infrastructure and negative attitudes of the public with regard to SWM.

Overall, this study argues that private sector participation in SWM in Zambia remains low and less effective. Private sector participation in SWM and their effectiveness had been affected by diverse factors – internally and externally. The study shows two internal and external elements. The first is that internally, the study showed that private companies lacked appropriate machinery for solid waste collection. The second is that external factors included poor client compliance in payment of service fees which was affected by lack of awareness of the dynamics of SW collection in the areas. The poor client compliance in paying service fees affected the companies' revenue base. Therefore, companies could not afford to procure appropriate equipment and repair the broken-down equipment/ machinery. Some of the consequences have been infrequent and limited collection of waste by private companies.

6.2 Recommendations

This study makes the following recommendations:

Policy recommendations

i. Government should consider expanding the Lusaka City Council, Zambia Environmental Management Agency and private companies' capacity in the area of finances, manpower and vehicles. This would enhance adequate monitoring and supervision of private companies and Waste Management Districts. The private companies would be able to expand their service coverage and efficiency and in turn improve the quality of the environment.

ii. Awareness to the general public should be created through mass media by the Lusaka City Council and Zambia Environmental Management Agency on the existing policies on waste management and on existing policy guidelines regulating the operations of private waste management companies so that the public can continually use the services of private companies. An informed citizenry is key to achieving any desired results hence sensitising the general public on the existing policies on waste management will help in achieving effective solid waste management.

iii. Government through the relevant ministries should consider providing incentives such as access to financing for capital equipment and reducing import tax for solid waste vehicles. This is to enable the companies procure new vehicles and equipment which will improve their service delivery. This would help to revamp/support private sector participation in SWM.

iv. To ensure financial cost recovery of the solid waste services by private companies, the service fees should be revised by Lusaka City Council to reflect the cost of services.

v. In order to revamp/support private sector participation in solid waste management, local authorities need to establish a strategic framework tailored to local conditions and tailored solutions for Waste Management Districts.

Recommendation for Future Research:

vi. In order to fully understand issues which were not addressed in this study, more research is required to be conducted especially in the area of government's role in ensuring the sustainability of public-private partnership approach in waste management in Lusaka city. This will help to improve and consolidate the achievements made in engaging the private sector in waste management as well as expanding the service coverage beyond the conventional and peri-urban areas in the city.

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APPENDICES

Appendix I: Interview Guide for the Private Companies

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES & SOCIAL SCIENCES

DEPARTMENT OF DEVELOPMENT STUDIES

RESEARCH TITLE: The Role and Effectiveness of Private Sector Companies in Solid Waste Management in Lusaka, Zambia**.**

INSTRUCTIONS:

1. Introduce yourself
2. Explain the purpose of the study
3. Assure respondent confidentiality
4. Explain to the respondent that their participation in this study is entirely on voluntary basis and that the interview is not a test, there is no right or wrong answer but respondents should feel free to provide accurate information to the best of their knowledge.

   Date of Interview: ..... Time: ……

A. BACKGROUND INFORMATION

1. Name of Respondent:
2. Sex:
3. Age:
4. Position in Organization:
5. Name of Organization:
6. Physical Address:
7. Educational level:
8. How long have you been working in this institution?
9. Number of employees in the company:
10. Number of employees engaged in solid waste collection and disposal:
11. Number of permanent employees:
12. Number of casual employees:
13. Average age (years) of the staff involved in solid waste collection:

B. SOLID WASTE MANAGEMENT INFORMATION

1. How long has the company been involved in solid waste management services?
2. What is the method of waste collection? Is it house to house collection, communal collection using transfer stations, if other (specify)?
3. How many households do you offer solid waste management services to?
4. Are the contracts between you and your clients verbal or written?
5. What are your expectations of your clients and have you noted any positive trends/patterns from your clients?

Quantity of waste collected

6. How much waste do you collect per household and do you have a limit of waste to collect?

Service Fees

7. How much do you charge your clients?
8. What is the payment mode? Is it daily, weekly, monthly, quarterly, annually or other?
9. Do you experience any difficulties in collecting the fees from your clients?

Type of Solid Waste Management Vehicles

10. How many vehicles are used for solid waste collection and disposal in your firm and are the vehicles owned by the firm or hired?
11. What type of vehicles are they? E.g., Open Body Tipper, Closed Body Tipper, Tractor with trailer, Pickup, Open Lorry, Hand Cart
12. What is the estimated waste (tonnes) collected and disposed off per week?

Consistency and Frequency of Collection

13. How many times in a week do you collect waste and which specific days do you collect the waste and time of collection?
14. Where do you dump the waste?

Challenges

15. What challenges do you face in collecting waste?
16. What recommendations do you propose on how to improve solid waste management?

THANK YOU SO MUCH FOR YOUR CONTRIBUTIONS

Appendix II: Interview Guide for the Local Authority (Lusaka City Council)

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES & SOCIAL SCIENCES

DEPARTMENT OF DEVELOPMENT STUDIES

RESEARCH TITLE: The Role and Effectiveness of Private Sector Companies in Solid Waste Management in Lusaka, Zambia.

INSTRUCTIONS:

1. Introduce yourself
2. Explain the purpose of the study
3. Assure respondent confidentiality
4. Explain to the respondent that their participation in this study is entirely on voluntary basis and that the interview is not a test, there is no right or wrong answer but respondents should feel free to provide accurate information to the best of their knowledge.

Date of Interview: …….. Time: ……

A. BACKGROUND INFORMATION

1. Name of Respondent:
2. Sex:
3. Age:
4. Position in Organization:
5. Name of Organization:
6. Physical Address:
7. Educational level:
8. How long have you been working in this institution?

B. SOLID WASTE MANAGEMENT INFORMATION

1. How were private companies incorporated in collecting waste?
2. What criteria do you use to select the private companies?
3. What are your expectations of private companies in the provision of solid waste management services?
4. How have the private companies been performing?
5. What significant improvement has been recorded in waste management after engaging private companies?
6. How often do you monitor their areas of operation?
7. Do you pay the companies involved in the provision of solid waste management services?
8. How do you inform the residents about the presence of private companies in their areas?
9. What role do you think households have in solid waste management?
10. How would you describe the attitude of the public in general and that of the people in medium density populated residential areas towards waste management?
11. What challenges do you think the private companies face in the provision of solid waste management services?
12. What are the main challenges your organization face in monitoring private companies?
13. What recommendations would you give to the private companies on how they can improve their solid waste management?
14. What do you think should be done to tackle this problem of SWM on a long term basis?
15. Anything else to add on what has been discussed?

THANK YOU SO MUCH FOR YOUR TIME!

Appendix III: Interview Guide for Zambia Environmental Management Agency

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES & SOCIAL SCIENCES

DEPARTMENT OF DEVELOPMENT STUDIES

RESEARCH TITLE: The Role and Effectiveness of Private Sector Companies in Solid Waste Management in Lusaka, Zambia.

INSTRUCTIONS:

1. Introduce yourself
2. Explain the purpose of the study
3. Assure respondent confidentiality
4. Explain to the respondent that their participation in this study is entirely on voluntary basis and that the interview is not a test, there is no right or wrong answer but respondents should feel free to provide accurate information to the best of their knowledge.

Date of Interview: ..... Time: .....

A. BACKGROUND INFORMATION

1. Name of Respondent:
2. Sex:
3. Age:
4. Position in Organization:
5. Name of Organization:
6. Physical Address:
7. Educational level:
8. How long have you been working in this institution?

B. SOLID WASTE MANAGEMENT INFORMATION

1. What is the role of your organization in solid waste management?
2. How long has your organization been doing this?
3. What programs and strategies do you have in place for solid waste management for Lusaka and places like Chilenje and Chelstone?
4. What is your assessment of the waste management service provision in Lusaka?
5. How were private companies incorporated in collecting waste?
6. What criteria is used to select the private companies?
7. As a regulator, what are your expectations of private companies in the provision of solid waste management services?
8. How have the private companies been performing?
9. What significant improvement has been recorded in waste management after engaging private companies?
10. How often do you monitor private companies and councils?
11. Does your organisation carry out sensitisation activities on SWM?
12. What role do you think households and LCC have in solid waste management?
13. How would you describe the attitude of the public in general and that of the people in medium density populated residential areas towards waste management?
14. What challenges do you think the private companies face in the provision of solid waste management services?
15. What are the main challenges your organization face in monitoring private companies and the councils?
16. What recommendations would you give to the private companies and LCC on how they can improve their solid waste management?
17. What do you think should be done to tackle this problem of SWM on a long-term basis?
18. Anything else to add on what has been discussed?

THANK YOU SO MUCH FOR YOUR TIME!

Appendix IV: Household Questionnaire

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES & SOCIAL SCIENCES

DEPARTMENT OF DEVELOPMENT STUDIES

Dear Sir/ Madam,

RESEARCH TITLE: The Role and Effectiveness of Private Sector Companies in Solid Waste Management in Lusaka, Zambia

I am a student at the University of Zambia, pursuing a Master of Arts in Development Studies. As part of the academic requirements, I am carrying out a research on **"The Role and Effectiveness of Private Sector Companies in Solid Waste Management in Lusaka, Zambia"**. You have been randomly selected to participate in this study, however, your participation is entirely on voluntary basis. I am therefore requesting you to spare some time and fill this questionnaire. The information you give will be treated confidential and will be anonymously used for purposes of writing the research report, and will not be used for any other purpose.

Thank you for your cooperation.

INSTRUCTIONS

Read the instructions and understand. Where not clear, you are free to ask.

1. Answer the questions either by ticking the most appropriate response(s) in the spaces provided [√] or by writing down the answers in the spaces provided. In case you need to additional space, you can write on the reverse side of the paper or any convenient additional paper.
2. The information obtained will be treated in strict confidence. You are therefore requested not to write your name or address or anything else on the questionnaire apart from the information being requested for.
3. Give clear and simple explanations to the questions which requires an explanation.

DATE OF INTERVIEW: …….. QUESTIONNAIRE NO……

SECTION A:

BACKGROUND INFORMATION (Please tick √ where applicable)

(1) Sex of the respondent

1) Male [ ]
2) Female [ ]

(2) Marital status

1) Single [ ]
2) Married [ ]
3) Divorced [ ]
4) Separated [ ]
5) Widowed [ ]

(3) Age Group

1) Below 19 [ ]
2) 20- 24 [ ]
3) 25- 29 [ ]
4) 30- 34 [ ]
5) 35- 39 [ ]
6) Above 40 [ ]

(4) What is the highest level of education you have attained?

1) Primary [ ]
2) Secondary [ ]
3) Tertiary (College or University) [ ]
4) None [ ]

SECTION B:

SOCIAL – ECONOMIC INFORMATION

(5) What is your current employment status?

1) Employed [ ]
2) Self-Employed [ ]
3) Unemployed [ ]
4) Other (Please specify)

……
……
……

(6) Are you the head of your household?

1) Yes [ ]
2) No [ ] Please specify relationship to the head of the household

……
……

(7) How many people are currently living in your house? Please specify the exact number

……
……..

(8) Please state the household average income?

1) Below K1,000 [ ]
2) K1,001 – K5,000 [ ]
3) K5,001 – K10,000 [ ]
4) K10,001 – K15, 000 [ ]
5) Over K15, 000 [ ]

SECTION C:

KNOWLEDGE, ATTITUDES AND VIEWS ON THE MANAGEMENT OF SOLID WASTES IN THE RESIDENTIAL AREA

(9) Are you aware of any solid waste management services provided by a private company in your area?

1) Yes [ ]
2) No [ ] Please skip to Q11

(10) How were you informed?

1) Sensitisation by the private company[ ]
2) Sensitisation by the Lusaka City Council [ ]
3) Media [ ]
4) Friends/ Relatives [ ]
5) Local Leadership [ ]
6) Other (Please specify)

……

……

(11) Have you subscribed with a private waste company to collect garbage or waste from your house?

1) Yes [ ]
2) No [ ] Please skip to Q14

(12) When did you subscribe? Please specify the year.

……

(13) What method of solid waste disposal were you using before the private company was engaged?

1) Burning the waste [ ]
2) Burying it [ ]
3) Dumping it on the open areas [ ]
4) Collected by Lusaka City Council [ ]
5) Other (Please specify)

……

(14) If you said no to question (11), kindly specify which solid waste disposal method your household uses?

1) Burning the waste [ ]
2) Burying it [ ]
3) Dumping it on the open areas [ ]
4) Other (Please specify)

……

(15) If you said no to question (11), why haven't you subscribed with the private company?

……

……

.....

>> Please skip to Q31

(16) If you said yes to question (11), what is the name of the private company?

……

(17) What type of contract do you have with the private company?

1) Written Contract [ ]
2) Verbal Contract [ ]

(18) Do you pay any fee for wastes collection?

1) Yes [ ]
2) No [ ]

(19) If you said yes to question (18), how affordable is the current fee that the private company charges for waste collection?

1) Affordable [ ]
2) Relatively Affordable [ ]
3) Not Affordable [ ]

(20) If you said yes to question (18), does the private company issue you a receipt?

1) Yes [ ]
2) No [ ]

(21) If you said no to question (18), why don't you pay waste collection fees?

……

……

……

(22) How often does the private company collect waste?

1) Daily
2) Weekly
3) Monthly
4) Other, (Please specify)

……

(23) Does the private company collect waste on the agreed day of collection?

1) Yes [ ] Please skip to Q26
2) No [ ]

(24) If you said no to question (23), please explain.

……

……

(25) Do they make up for not collecting waste? Please explain.

……

……

(26) Are you notified by the private company when there is a delay in waste collection?

1) Yes [ ]
2) No [ ]

(27) How does the private company collect the waste?

1) They pass through my home to collect [ ]
2) They have put communal bins where we throw the waste [ ]
3) Other, (Please specify)

……

(28) Is there a limit of waste the private company collects from your house?

1) Yes [ ]
2) No [ ] Please skip to Q30

(29) If you said yes to question (28), please specify the Kgs.

……

(30) How would you rate the current waste management services provided by the private company to your home?

1) Very Good [ ]
2) Good [ ]
3) Moderate [ ]
4) Bad [ ]
5) Very Bad [ ]

(31) Where do you store your waste?

1) Use Bins [ ]
2) Use Plastic bags [ ]
3) Dump outside [ ]
4) Bury [ ]
5) Other (Please specify)

……..

(32) What type of vehicles do the private companies use to collect waste in your area?

1) Open Van [ ]
2) Open Truck [ ]
3) Tipper [ ]
4) Other (Please specify)

……

(33) Is the waste well secured to avoid spillage when it is collected?

1) Yes [ ]
2) No [ ]

(34) Do you think the private company that collects waste in your residential area has improved the cleanliness of the surrounding?

1) Yes [ ]
2) No [ ]

(35) What do you think are the major causes of poor solid waste management in your area?

……
……
……
……

(36) What challenges do you face in solid waste management?

……
……
……
……

(37) What challenges do you think the private company faces in solid waste collection?

……
……
……
……

(38) What do you think should be done to improve the management of solid waste in your area?

……
……
……
……

END INTERVIEW.

THANK YOU SO MUCH FOR YOUR TIME!

Appendix V: Observation Checklist for the Study Areas

THE UNIVERSITY OF ZAMBIA

SCHOOL OF HUMANITIES & SOCIAL SCIENCES

DEPARTMENT OF DEVELOPMENT STUDIES

RESEARCH TITLE: The Role and Effectiveness of Private Sector Companies in Solid Waste Management in Lusaka, Zambia

OBSERVATION CHECKLIST FOR CHILENJE AND CHELSTONE RESIDENTIAL AREAS

1. Time of solid waste collection
2. Frequency of solid waste collection
3. Number of staff or personnel collecting waste
4. State of vehicles used to collect waste
5. Whether waste is covered or not after collection
6. How households store their waste
7. Storage containers used to store waste
8. Collection points of waste
9. State of the environment