

# Assessing the Efficiency of Solid Waste Management by Private Companies in Lusaka City: Case of Kabwata Constituency.

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## ABSTRACT

This study examined the effect of private companies' solid waste management on Lusaka's waste management. The general objective of this study was to assess the efficiency of solid waste management by private companies in Lusaka city. The specific objectives are to determine if there are any policy inadequacies in the public-private partnership which leads to accumulation of solid waste in the city, to determine whether household income has a bearing on solid waste management by private companies, to determine if there are sufficient private companies collecting refuse to cater for the increasing population in Kabwata constituency and to determine whether management of solid waste by private companies reduces solid waste accumulation in undesignated places. Applying a qualitative inductive case study approach, both the households and the business community indicated that the Lusaka City Council (LCC) did not have sufficient companies to undertake solid waste collection under the Public Private Partnership (PPP) strategy. Additionally, the study revealed that household and business income had no influence on solid waste collection by private companies, and the majority of the respondents indicated a minimal reduction in the accumulation of solid waste. Key informants from the Lusaka city council indicated policy inadequacies to compel residents and business communities to adhere to strict solid waste management guidelines and to compel them to register with a solid waste company designated by LCC. Therefore, the study recommends that measures be undertaken to increase the number of companies engaged in solid waste management and policy measures should be enforced to compel residents and business entities to subscribe to private companies and adhere to solid waste management guidelines as prescribed by the law.

**Keywords:** Local Government Authority; Public Private Partnership; Devolution; Constituency; Solid Waste Management:

## INTRODUCTION

### Background of the Study

Local Government Authority (LGA) is an administrative organization that governs a local geographic region, such as a city, town, county, or state. Local government authorities are in charge of areas that are smaller than a state in size and function. Local government institutions include City Councils, District Councils, Township Councils, and Municipality (Maddick, 1963).

In Zambia, the small geographical areas, compared to the Nation's geographical area consists of City,

Municipal, and District councils as established by the local government act of 2019 (LGA,2019) and the Zambian constitution Amendment act of 2016. Solid waste mismanagement seems be an ever-growing environmental problem in Zambia and it is happening at a faster rate (Furedy, 1990).

Regarding solid waste management systems, private enterprises are involved in a wide range of operations. These include collection of waste, refuse recovery, incineration, and landfill operation (LGA,2019). Solid waste management private companies participate in the management of waste system in so many ways and these include signing contracts where municipalities pay them to perform duties like collecting, processing, disposal and/or cleaning services for compensation. Private companies also purchasing rights to carry out services and keep part of or all the income that is being generated, sign contracts with businesses or individuals for collection services and continue to function as a purchaser for the material that has been recovered from either the municipal or the collector (Furedy, 1990).

The LGA (2019) of the Republic of Zambia (GRZ hereafter) in the first (1<sup>st</sup>) Schedule cites eleven functions of local government Authorities and refuse also known as solid waste is detailed in section 10 of the first schedule of the local government Act of 2019. In this study, the local government authority in which the research was conducted is the Lusaka City council with Kabwata constituency as a case study. The system built around solid waste management by Lusaka city council has been inadequate evidenced by the indiscriminate accumulation of waste in many parts of Kabwata constituency, streets, markets and bus stations. In order to effectively manage solid waste in Lusaka city, the Lusaka city council in conjunction with private companies is engaged into a public private partnership to manage solid waste at a fee (LGA,2019).

The Solid Waste Regulation and Management Act of 2018(SWRA,2018) was passed by the Zambian parliament, which regulates for the mechanisms by which local government authorities can engage with private corporations to collect solid waste through public-private partnerships (PPPs). Specifically, this Act addresses “the sustainable regulation and management of solid waste; general and self-service solid waste services; the incorporation of solid waste management companies and the definition of their statutory functions; the licensing and statutory functions of solid waste service providers, operators, and self-service solid waste providers and their functions; the regulation, operation, and maintenance of landfills and other disposal facilities; the establishment of so-called “sustainably managed solid waste” facilities; the regulation, operation, and maintenance of landfills and other disposal (SWRA,2018 p.56-58).

Public-Private Partnerships (PPPs) have the opportunities of leveraging additional private resources to address service gaps in both quality and quantity. PPPs benefit from the private sector’s innovation, access to money, technological knowledge, and managerial efficiency, while the public sector brings social responsibility, environmental awareness, and local knowledge, all of which are critical in solving problems in most metropolitan contexts (Bennet, 1989).

It was against this background that this study was conceived to assess the impact of solid waste management by private companies on waste accumulation in Lusaka.

It is envisioned that the findings and recommendations of this study will be used to develop policies that will motivate more households and businesses in Kabwata constituency, as well as the greater city of Lusaka city to sign up to waste management companies, thereby reducing the accumulation of garbage in undesignated areas. This study is significant in the sense that, the information generated will benefit all local government authorities and residents as it will stimulate a sense cleanliness and hygiene in the city. Additionally, we believe that the findings and recommendations of this research will strengthen the PPPs assist in garbage collection services by the local councils, the Ministry of Local Government and Housing, public and community-based businesses (CBEs).

## Problem Statement

Solid Waste Management has been a source of concern in most nations throughout the world for decades. There have been scholarly debates on the optimal policies to implement in order to ensure long-term sustainable Solid Waste Management services (United Nations Integrated Regional Information Network, 2008 and Chulu, 2017). There has been a severe problem at every level of solid waste management in the city of Lusaka. These problems have included garbage collection, sorting, transportation, and disposal, to name a few (Chulu, 2017). Previously, the central government had the sole responsibility of providing Solid Waste Management services. However, due to the higher rate of waste generation that keep along with the increasing cost involved in managing solid waste; Local governments (LGs) in Zambia were forced to enlist the private sector to provide Solid Waste Management services to households and business (Waife, 2014; Siyachiyako 2016). According to research done by international labor organization (ILO: 2019) in conjunction with Lusaka city council (LCC) dubbed “Start Your Waste Collection Service” the study unravels that the LCC and private collectors effectively collect about 15% of projected residential waste while the municipal council of Lusaka collects around 12%. This level of garbage collection rate seems to be way below the rate of waste generation. Furthermore, the literature review seems to indicate that there is a gap in this area given that there are no studies that have been done on the efficiency of solid waste management by private companies in Kabwata Constituency in Lusaka city. Therefore, this study is necessary to fill the knowledge gaps. The study helps to unravel the inefficiencies or bottlenecks of solid waste management by private companies Lusaka City.

The General Objective of this study is to assess the efficiency of solid waste management by private companies in Lusaka city based on the following specific objectives.

1. To determine if there are any policy inadequacies in the public-private partnership which leads to accumulation of solid waste in the city.
2. Determine whether household income has a bearing on solid waste management by private companies.
3. To determine if there are sufficient private companies collecting refuse to cater for the increasing population in Kabwata constituency.
4. To determine whether management of solid waste by private companies reduces solid waste accumulation in undesignated places.

This research was undertaken in Zambia, a Southern African country with 116 districts and a population of 17,885,422 people, according to Zambia’s central statistics office (Zamstats, 2018). Amongst the districts, Lusaka District of Lusaka Province was chosen with particular emphasis in Kabwata constituency, one of the constituencies that fall under Lusaka city council. As such, since the study was undertaken only in Kabwata constituency, in Lusaka and in Zambia as a whole, the extent to which its findings were generalized was limited.

## RESEARCH METHODOLOGY

### Data descriptions and analyses

The study adopted a qualitative case study method approach following Bryman and Bell (2011). Interviews and questionnaires were the tools used to collect data. Taking an interpretative and naturalistic approach was core to this study (Denzin and Lincoln, 1994: 2).

Kabwata constituency was a case study. A case study was used to reduce a large field of study which is

Lusaka City. The residents, businesses and companies involved in solid waste management were respectively conveniently and purposively selected from within Kabwata constituency. The sample consisted of 50 households within Kabwata constituency, 20 business from Kabwata constituency premises, and four (4) key informants from Lusaka city council (LCC). The participants were drawn from various part of Kabwata constituency to represent all the five wards. Purposeful sampling was used with open ended questionnaires to interview households, business premises as well as key informants from Lusaka city council. Semi-structured interviews were used to collect data from officials at LCC's department of public health. The Population of Kabwata constituency according to Zambia Central Statistics office by the time of this research was about 174,338. To establish the number of households in kabwata, the population was divided by 5 persons per household, based on the 2018 Demographic and health survey done by DHS which established that each household had 5 members on average. This brings about 34,867 households as a study population. This research gathered qualitative data which was analyzed using content analysis. Mixed research methodology was adopted in this study (Downe-Wamboldt, 1992).

## LITERATURE REVIEW

### Theoretical Review

#### The Theory of Waste Management.

There are few theories that have been postulated by organizations and scholars towards solid waste management. The European Council Directive on Waste defines "waste management as collection, transport, recovery and disposal of waste, including the supervision of such operations and after-care of disposal sites." It further postulates that "Waste Management Theory is founded on the expectation that waste management is to prevent waste causing harm to human health and the environment" Pongráczl, Phillips and Keiski (2004). The waste management theory basically stipulates the functional elements of Municipal Solid Waste which include waste generation, waste handling and separation, collection, separation, processing and transformation of solid wastes, Transfer and transport and Disposal (Hiriya, 2003). Popov et al. (2004) assert that the theory of waste management gives a more detailed account of domain and consist of waste analyses, activities based upon waste coupled with an all-inclusive opinion of the aims of solid waste management. The theory of waste management is premised on the belief that management of waste is to inhibit waste causing harm to both human health and the environment. What is more crucial is to properly define and construct an agenda of waste management that is sustainable. This boils down to the case to which the current legislation attends to the existing solid waste problems.

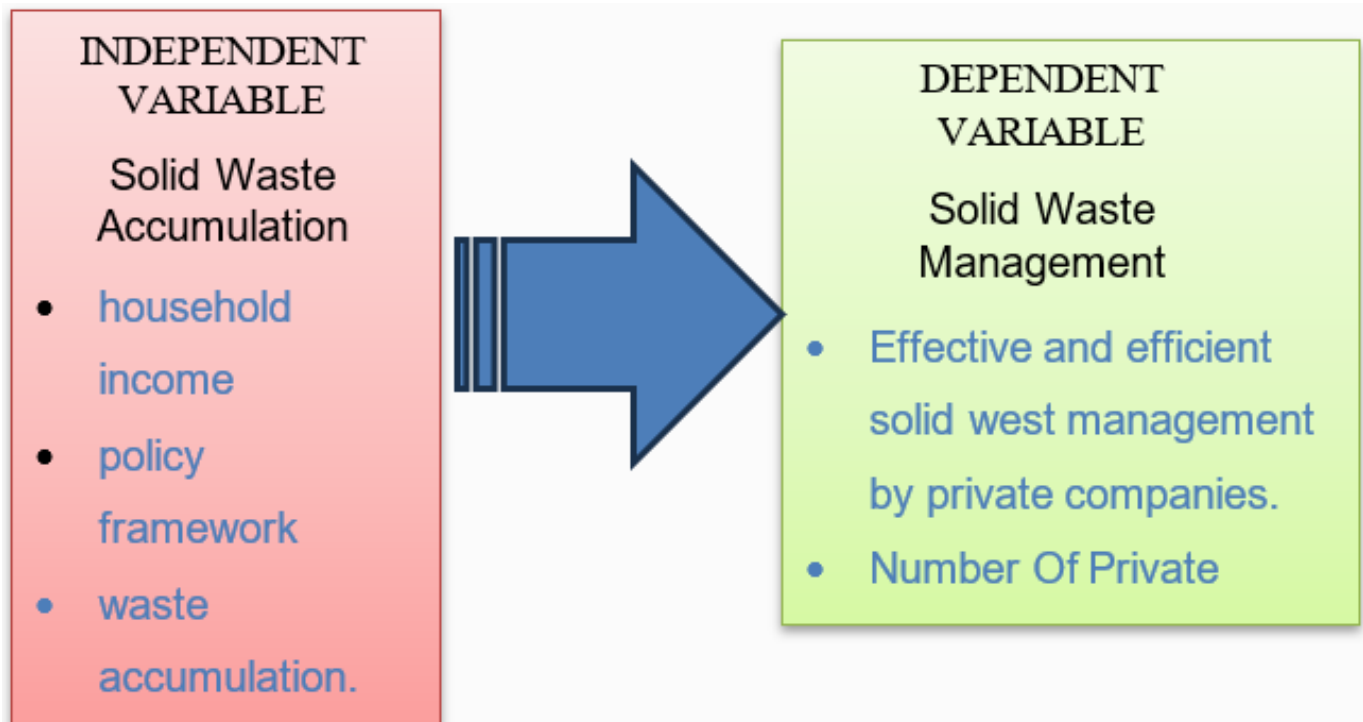
#### The theory of Waste Hierarchy

3. The theory of waste hierarchy rests on the "3 Rs". The "3 Rs" stand for "Reduce waste, Reuse waste, and Recycle waste," according to the waste hierarchy. This theory classifies waste management systems based on how waste-minimization-friendly they are. The waste hierarchy remains the bedrock upon which most waste reduction programs are built. The Garbage Hierarchy's goal is to acquire the most practical advantages from items while producing the least amount of waste (<http://www.wastemanagement.html> retrieved March 23, 2009). The two theories outlined in this section are some of the solid waste management theories that are relevant to this study.

### Conceptual Framework

The conceptual framework in figure 3.1 which was employed in this study, depicts the aspects that, if considered, would result in successful solid waste management in areas served by private Enterprises.

Figure 3.1 Conceptual Framework.



Source: Authors elaboration.

Private companies’ ability to deliver effective SWM is influenced by a variety of factors including the implementation and enforceability of existing regulatory and legal frameworks, stakeholder engagement in SWM, effective management practices of private enterprises, and the ability to address SWM issues head-on. Waste collection in cities is projected to improve, while wastes in regions served by private enterprises are expected to decrease, if these variables are considered by relevant politicians or lawmakers. As demonstrated above, the researcher created a conceptual framework to explain the nature of interactions between the study’s variables.

**Empirical Literature Review of Related Literature.**

According to the United Nations(1990), global population has been increasing every year and with it comes an increase in generation of waste and the demand for better methods of waste management. In 1800, less than 5% of the world’s population lived in cities; by 2000, that number had risen to 47%, and by 2030, it is expected to reach 65 percent (UN, 1990).

A research by Ferronato and Torretta (2019) agreed with the narrative that solid waste management is a global issue, in a journal published titled: “Waste Mismanagement in Developing Countries: A Review of Global Issues”. Solid waste management is a global issue which needs serious intervention as it is an environmental contamination which affects social inclusion, and economic sustainability.

Another study was conducted by Pineda (2002) in which the type of storage depository before disposals as well as plastic bags, garbage bin, empty drums, sacks and plastic containers with lids from households, the schools, and commercial establishments including industries were enumerated. Other authors such as Demecillo (2004), had conducted a study which focused mainly on the sources of garbage as an assessment of solid waste management in the city of Daanbantayan, Cebu. Further, Bernaldez (2000), also did a study on garbage problems in Cagayan de Oro City where a number of residents recorded and experienced flooding caused by overflow of canals clogged by solid waste. Burning, recycling, and composting of

wastes generated in households was applied under this study. In the study by Uy (1998), the reason why the problem of managing waste has become more complicated is that it has changed over the last 30 years. This increased problem results from urbanization of goods by both commercial and industrial establishments which are further worsened by the careless attitude among the public.

In Africa, according to Godfrey (2019), moist, biodegradable organic waste accounts for approximately 57 percent of municipal solid waste (MSW). Furthermore, the high organic content of garbage is linked to the amount of paper and packaging, which is a frequent example of municipal solid waste (MSW) in developing Countries.

Diangamo (2020) conducted study at the University of Zambia to explore the policy and legislative norms supporting private sector engagement in solid waste management in Zambia. The most important objectives of this study were to get an understanding of the role and effectiveness of private sector firms in solid waste management in Lusaka, Zambia. Her research, on the other hand, discovered that private businesses were inconsistent in delivering Solid Waste Management services to households and business premises, and the amount of waste collection was low, posing environmental and human health concerns. The reasons provided were that private enterprises lacked the necessary equipment and machinery for effective garbage collection and disposal, resulting in poor waste collection and the buildup of refuse in undesignated areas. Residents who registered to rubbish collection, on the other hand, failed to pay their membership fees, significantly impacting the operations of the firms involved. It was not established in her research as to whether household income had an impact on refuse collection or whether it was just a lack of compliance and appreciation on the part of households and commercial enterprises.

## RESEARCH FINDINGS AND DISCUSSIONS

We discuss the research findings according to the research objectives.

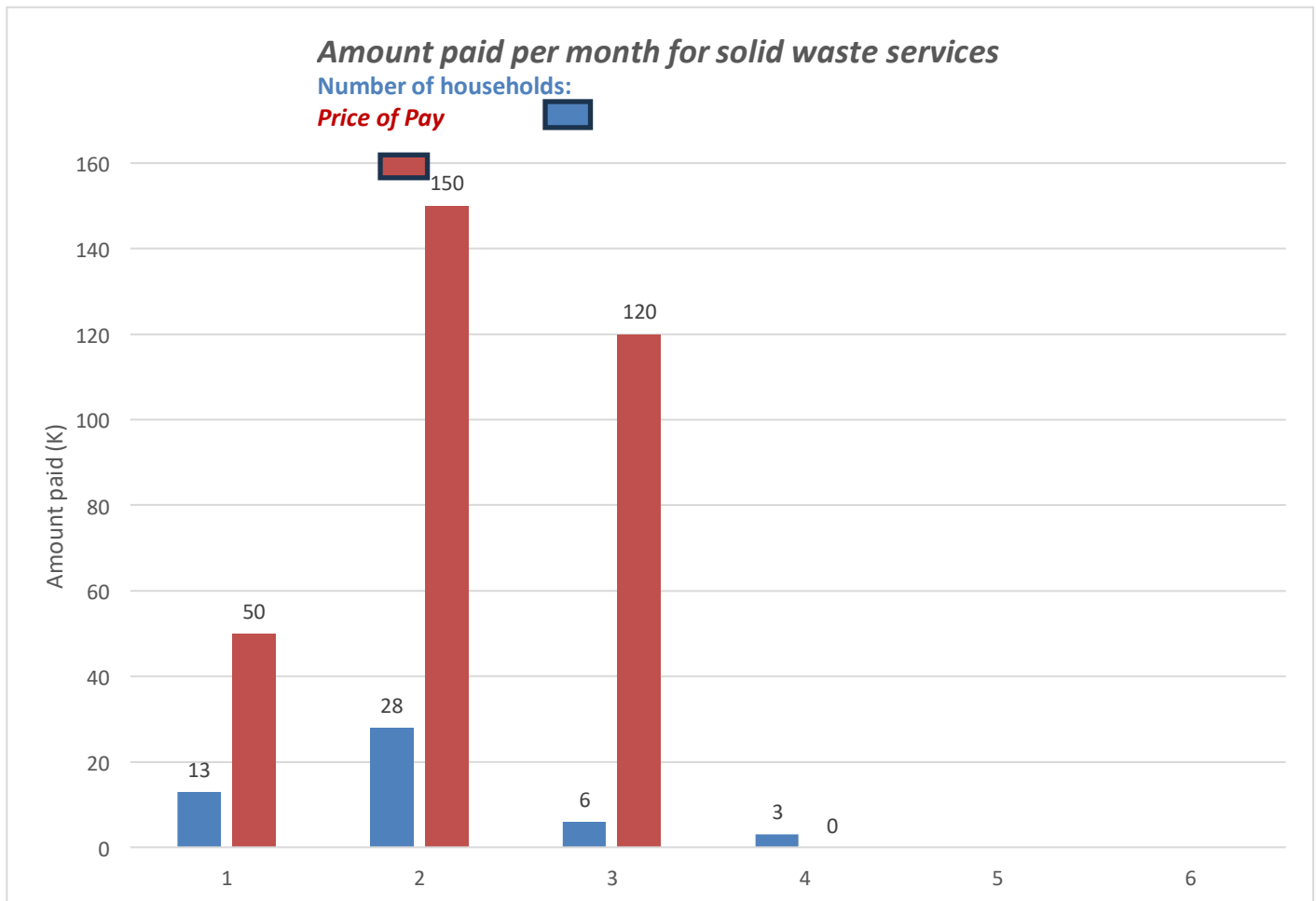
### **1. To determine if there are any policy inadequacies in the public-private partnership which leads to accumulation of solid waste in the city.**

Key informants was Lusaka city council did attest to the fact there were policies in the form laws and regulations put in place to prevent accumulation waste and its indiscriminate disposal in the city of Lusaka were Kabwata constituency is located but that the policies were not adequate as they did not compel households and business premises to subscribe to private companies contracted under Public private partnership to collect refuse on behalf of Lusaka city council. When asked has what should be done in terms of eliminating any inadequacy in the laws formulated to effectively manage solid waste in the city, the key informants called for more stiffer punishments on households and business premises that do not adhere to solid waste regulations and mandate them to be registered with a solid waste management company recognized by Lusaka city council under the Public Private Partnership agreement. The informants also did acknowledge that the laws and regulations do offer proper guidance and sensitization of solid waste management to the public. Mass media and advertisement has been used to support public awareness so that households especially the ones in urban areas can be involved in the development of solid waste management programs.

### **2. Determine whether household Income has a bearing on solid west management by private companies.**

In order to know how much each individual pays for household solid waste collection, a question was asked, and the people answered according to how much they pay based on which solid waste company they are dealing with. Out of the 50 participants in the household sample size collected, 13 households indicated that they pay K50 for a month, 28 indicated they pay K150 per month while 6 households indicated that they pay

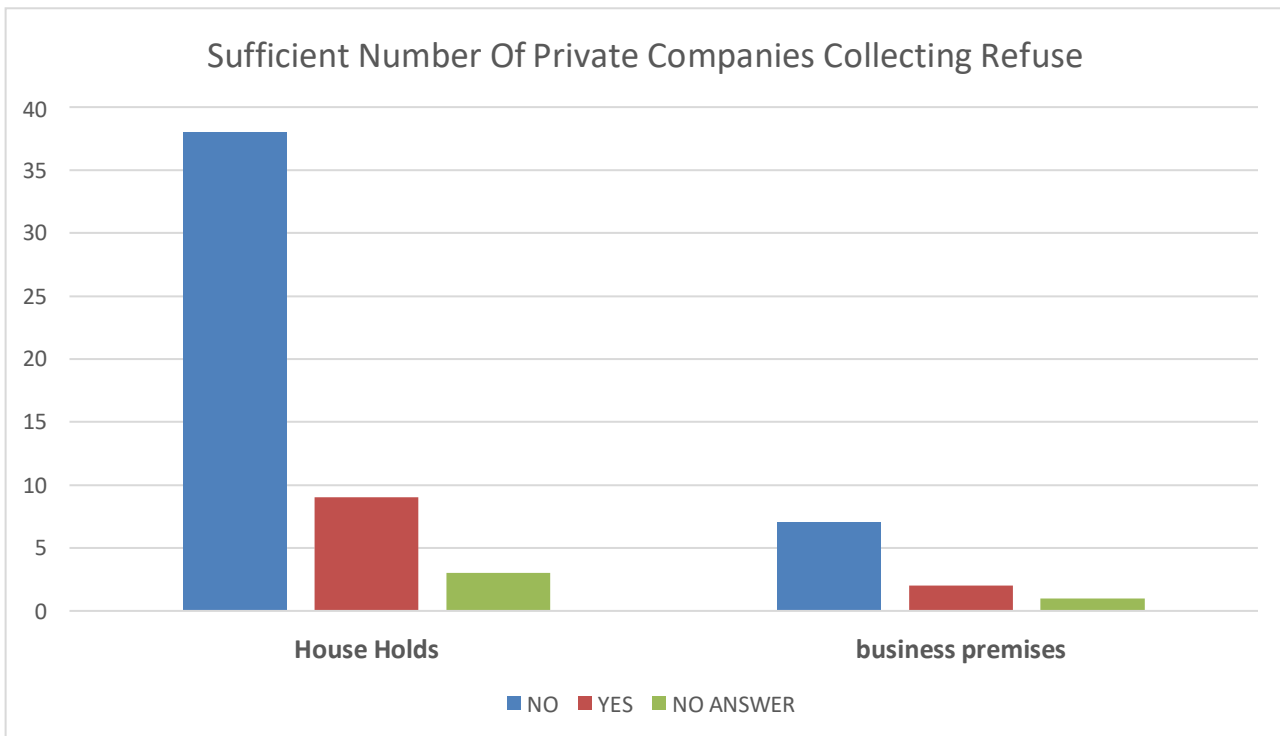
K120 per month. This shows how each household pay for waste service and according to the individuals, the payment price varies according to the areas and type of company they get to engage in waste collection. It was, however, sad to learn that not all household engaged private companies to collect solid waste.



Households were asked how often they pay for solid waste collection by private companies. The feedback from the majority of the households and the business premises showed consistence in monthly payments for the service that was provided by the private companies collecting waste. There was no indication of failure to pay for the service. The data also showed that the payment price for waste collection varied depending on the company providing the service and also according to the areas and type of company they get to engage in waste collection. It was, however, sad to learn that not all household engaged private companies to collect solid waste in the areas which begged the question as to how they dispose off the waste that they are generating. It was also notable that the household income was not the major factor but lack of compliance to the regulations on disposal of waste.

**3. To determine if there are sufficient private companies collecting refuse to cater for the increasing population in Kabwata constituency.**

Majority of the total respondents from households, business community indicated that Lusaka city council did not have sufficient companies within the district to undertake solid waste management under PPP. This was also reaffirmed by all key informants at Lusaka city council that there not enough companies under public private partnership to undertake solid waste management. It was not stated by the informants has to whether this was a policy inadequacy or not. The informants also alluded to the fact that the prices charged by private companies engaged in solid waste collection from houses and businesses were competitive and cost reflective at the time this research was being conducted.



**4. To determine whether management of solid waste by private companies reduces solid waste accumulation in undesignated places.**

The above question was asked in order to determine if there has been a reduction in solid waste accumulation since the coming of the private companies involved. According to the data collected from the sample, majority of the households that is 35 (70%) indicated that they see no reduction as the companies are inconsistent in the collection of this solid waste in the areas around them. Meanwhile 15 (30%) out of the total sample size indicated that some reduction was noticeable though to a minimal extent as shown.



According to the conclusions of the research, private enterprises engaged in solid waste management have superior efficiency and capacity than public companies, particularly since they are not subjected to



bureaucratic red tape and the manner their equipment is maintained is generally outstanding. Further, the private companies are endowed with elements like dynamism, innovative, efficiency and these are the elements which favorably measure them up with the public sector. It would be plausible to conclude that solid waste accumulation in Lusaka District would be the insufficient number of companies under PPPs allocated to designate areas.

## CONCLUSION AND RECOMMENDATIONS

The policy inadequacies identified in Lusaka's public-private partnership (PPPs) align with global concerns regarding solid waste management, as highlighted by Ferronato and Torretta (2019). This suggested a need for investigations as to what specific policy inadequacies in the jurisdiction of Lusaka City council contributed to the Efficiency of Solid Waste Management by Private Companies In Lusaka City, The findings revealed that though the relevant laws such as Lusaka city council By-laws of 2004, the Local Government (Solid Waste Management), Regulations of 2011, Environmental Management Act of 2011 and the Public Health Act Cap, 295., were in place, There was no legal prescription to compel households and business premises to subscribe to a company that is registered under PPP arrangement.

According to this research, household income did not influence engagement with private waste management companies to such an extent that there will be no subscription from households. this finding was not researched on by Diangamo (2020) in her research. However, non-engagement of households and business premises within kabwata constituency with private companies engaged in solid waste management had raised concerns about waste disposal practices, reflecting a broader issue of social inclusion in waste management efforts.

The insufficient number of private companies for solid waste management in Kabwata constituency mirrors challenges faced in other developing countries, as noted by Godfrey (2019). Competitive pricing by existing companies indicates potential for market-driven solutions, but the root cause of insufficiency requires further investigation.

Furthermore, findings from this research also revealed that the involvement of Private companies in waste management did not significantly reduce solid waste accumulation in undesignated areas. which was consistent with the observations by Diangamo (2020). The reasons for this finding was a result of insufficient numbers of private companies engaged in Solid waste Management in Lusaka. however, Diangamo's (2020) research, did not highlight the sufficiency or the lack thereof in the number of companies involved solid waste management and premised her reasons on the lack of necessary equipment and machinery by the engaged private companies for effective garbage collection and disposal, resulting in poor waste collection and the buildup of refuse in undesignated areas

### Recommendations

In terms of policy, practice, and future research, the findings of this study suggest the following recommendations.

#### Policy recommendations

- The Lusaka City Council and should create effective public awareness through the media about existing waste management policies and policy guidelines regulating the operations of private waste management companies so that the public can continue to use their services. Because an informed populace is essential for obtaining any desired objectives, sensitizing the general people to existing waste management policies will aid in the achievement of effective solid waste management.
- Government could consider offering incentives, such as access to capital equipment financing and

cheaper import tariffs for solid waste trucks, through the relevant ministries in Zambia. This will improve service delivery, and solid waste collection businesses will be able to invest in new equipment to help them do their tasks more efficiently and effectively. This would significantly contribute to the revitalization and/or preservation of the private sector's engagement in solid waste management efforts.

- A strategic framework and solutions that is tailored to local conditions for solid waste management need to be established. This will enable private companies to operate in an enabling environment as such they would be able to execute their work more effectively.

### Recommendations for practice

- Households must learn to practice waste minimization through garbage recycling.
- Sanctions, such as the collection of fines for individuals who litter and/or have other associated difficulties with waste management disposal, including any other acts therein, need to be strengthened.
- Local governments should collaborate with the commercial sector and non-governmental organizations to execute a more comprehensive information campaign on proper solid waste management.

### Recommendation for Future Research

- A greater amount of research is needed to properly understand the problems that were not addressed in this study, particularly in regard to the government's role in ensuring that the public-private partnership model for waste management in Lusaka is sustainable in the long term. Increasing service coverage beyond conventional and impoverished cities will help in enhancing and consolidating the accomplishments made in incorporating private firms in solid waste management, as well as expanding service coverage outside traditional and underdeveloped cities.
- Recycling, reusing and reducing on the packaging should be considered for further research. The majority of families generated solid waste, which included garbage from the kitchen and packaging items. To avoid a high rate of unnecessary waste generation, it is critical for communities to conduct additional research in discovering recyclable materials and to educate families on the necessity of reusing, recycling, and minimizing packaging.
- Researchers should conduct a survey of identifying the illegal collectors of garbage in waste management and why they are unable to formally register for garbage collection and disposal.

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