EXPLORING COMMUNITY PARTICIPATION IN SOLID WASTE MANAGEMENT USING PARTICIPATORY ACTION RESEARCH IN ZAMBIA'S KANYAMA PERI URBAN AREA

BY

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DECLARATION

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ABSTRACT

Worldwide, over two thirds of human waste is released into the environment with little or no treatment. This later results in the deterioration of the urban environment in form of air, water, and land pollution that poses risks to human health and the environment. In the developing world, urbanization implies the expansion of existing slum areas and the mushrooming of new ones. The provision of solid waste management services in Zambia's Kanyama settlement, a slum area in the capital city Lusaka has proved to be a challenge which has been worsened and exacerbated by the lack of community engagement resulting in indiscriminate disposal of waste on the streets, empty spaces, ditches, drainages and streams. The purpose of this study is to explore ways to promote community participation in solid waste management using participatory action research.

The study employed qualitative participatory action research methods. Data was collected using Photo Voice as a core method with 3 Focus Group Discussions. A meandering Transect walk was conducted with 12 participants and 10 Key Informant Interviews. Data was analyzed using thematic analysis. Qualitative data analysis for photo voice involved an iterative, multi-stage, collaborative process between the participants and researcher.

The participatory study revealed that ward ten is grappling with major solid waste challenges, the community is littered with hip and hips of uncollected garbage, clogged drainage and strong stench coming from the uncollected garbage and over flowing pit latrines and swamps in the neighborhood. The study further unearthed illegal solid waste management practices and behaviors that residents have adopted over the years which has prevented them from subscribing to waste collection services. Illegal dumpsites have been created by residents in the community

Community led and community participation has long been accepted as the only sustainable process of ensuring long lasting and permanent positive change in the urban poor communities. The study explored community participation the inward ten of Kanyama, the findings point out to the fact that the lack of community led approaches to solid waste management as well as practices and attitudes adopted by the community over the years have allowed continued indiscriminate disposal of waste. As a community action oriented study these findings are not only relevant for planning, implementation purposes, the findings also authoritatively point out of the residents 's demands for revision of the legislative and policy environment in solid waste management in the country . The study also points the need for vigorous and massive community engagement for the residents to begin to change their mindset regarding waste in the community. The findings of this study further emphasize the importance of embracing community friendly and community led innovative ways of tackling of solid waste.

Keywords: Zambia, waste management, participatory action research, community participation, indiscriminate waste disposal

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

List of APPENDICES

ACRONYMS

CBEs	Community Based Enterprises
CSO	Central Statistics Office
MLGH	Ministry of Local Government and Housing
MoH	Ministry of Health
NGO	Non-Governmental Organization
NWASCO	National Water supply and Sanitation Council
UNCEF	United Nations Children's Emergency Fund
UMAIDS	United States Agency for International Development
WASH	Water and Sanitation Hygiene
WHO	World Health Organization

CHAPTER ONE: INTRODUCTION

1.0 Background of the Study

International Labor Organization 2007, has defined Solid waste as a by-product of human activities that tends to increase with the rate of urbanization, changing patterns of consumption and the improvement of living standards.

Worldwide, over two thirds of human waste is released into the environment with little or no treatment. This later results in the deterioration of the urban environment in form of air, water, and land pollution that poses risks to human health and the environment (Medina 2010). In the developing world, urbanization implies expansion of existing slum areas and the creation of new ones. Further, cities are often overburdened with solid waste provision services and as such in Africa and India for example only half of the waste generated is collected (Kumar and Nandini, 2013). This puts additional pressure on municipalities already unable to provide services to current residents.

Solid waste management has continued to present a huge growing challenge in developing countries with cities facing serious environmental degradation and health risks due to weak solid waste management systems (Nguyen et al. 2011).The vicious cycle of solid waste services is maintained by poor and inconsistent community based enterprises in informal settlements, resulting in inconsistent willingness to pay for solid waste services to community based enterprises. This results in the households or individuals in settlement dumping waste at night in drainages, burning and even burying in their backyards (WHO, 2009). Solid waste management in Lusaka is a major problem and is even worse during rainy season and poses a significant risk to human health (Fractal, 2009). As a result, Lusaka is suffering from a sanitation crisis that claims lives through annual out breaks of cholera, typhoid and dysentery. This is even more evident in peri urban settlements where there are already challenges of social services provision. Kanyama is not an exception, as it is densely populated and presumed to have poor solid waste management practices.

The vicious cycle of poor solid waste services which is either nonexistent or inconsistent in the informal settlements coupled with depressed incomes results in few people inconsistently willing to pay for solid waste services to community based enterprises.

This results in the households or individuals in the settlement dumping waste at night in drainages, burning and even burying in their backyards (WHO, 2009).

Whilst the authorities (both central and local) provide policies and processes which are expected to be enforced, attention on community participation to address this problem has been neglected (WHO, 2009).

The challenge of waste has become a topic of the day and has attracted the eyes of many and frequently discussed in urban settings with regard to its management. Due to the continuous growth in urban population coupled with its consumption patterns, the management of waste has become more and more complex (Hassan, 2000).

According to Mayeye (1997), Solid waste management is at its peak and cannot be over emphasized in Zambia. It not only affects the environment but Public Health as a whole. Solid waste is not limited to primary and secondary collection services but through to disposal.

According to Fractal (2009), Solid waste management in Lusaka is a major problem and in the situations of increasing extreme weather events like in the rainy seasons, Solid waste poses a significant risk to human health. As a result, Lusaka is suffering from a sanitation crisis that claims lives through annual out breaks of cholera, typhoid and dysentery. This is even more evident in peri urban settlements where there are already challenges of social services provision.

For Lusaka, waste generated per capita is estimated at 0.5kg per day (ECZ, 2008), with a population of 1,747,152 according to CSO, 2012b, the total waste generated every day comes to 873.6tonnes.The level of awareness and the practices of a certain group of people highly affects the response to solid waste management in different settings. Due to open dumping, waste decomposes and produces poisonous chemical substances that percolate in the soil and as such brings about ground water contamination especially for the communities that still use shallow wells as their source of drinking water.

In most cases, these illegal dumpsites are usually near and within residential areas and as such flies, cockroaches, pests among many pathogens bring health hazards to the households (Mayeye 1997).

Richard (2002), in his study equally added that open burning a form of waste disposal method largely practiced in most parts of Lusaka for example has become the easiest way of getting rid of solid waste. The implications of such a practice has been seen to cause serious environmental problems. Lack of community participation is one of the factors among several factors that contribute to the problem of waste accumulation in many developing countries. Upfront participation by communities in ensuring that their waste is properly stored, collected and disposed to the final dump site. Sustainability of solid waste management practices entails the availability of financial and human resources by the local authority and the active participation of the affected community (Anschutz, 1996).

Community partnership has an important element to the successful implementation of solid waste management programmes in developing countries. The local authorities then have since partnered with the affected communities to deal with the issue of solid waste management and this is mostly due to the physical and economic nature of slums. After so many attempts to deal with the problem, the local authorities opted for community partnerships. (Ahmed and Ali, 2004). (Palmer, 1998) communities need to have an understanding of the environment they live in and the associated health problems that come with poor solid waste management. Despite the problems in the communities being genuine distresses, the sole responsibility of their solution largely depends on the citizens themselves.

Community-based participatory research emphasizes the importance of including research participants and their communities in the process of knowledge development and seeks to model equity in research processes as well as outcomes (Minkler and Wallerstein, 2003). Whilst traditional research approaches are rooted in the belief that outside 'experts' are capable of gathering information about groups, conducting analysis and then using the information for change, participatory research approaches embrace an anti-oppressive practice perspective by emphasizing the necessity of including the people most affected by an issue in all stages of the research (Minkler and Wallerstein, 2003; Strier, 2006; Truman et al., 2000). Compared to researcher-driven approaches, participatory research models give primacy to participants who are regarded as the 'experts' of their own lives and communities.

Participants are encouraged to be involved throughout the research process, including problem formation, project design, data gathering, data interpretation and dissemination of the results (Israel et al., 1998). The perspectives offered by researchers, who often reside outside of the community, are combined with participants' knowledge to develop a combined understanding of the phenomena (Stoecker, 1997). In CBPR, the role of the researcher is a facilitator of and collaborator in the research endeavor (Ansley and Gaventa, 1997; Williams and Brydon-Miller, 2004). Photovoice is one example of a CBPR approach that integrates photography and critical discussion to examine issues from the perspective of the 'resident experts', the people living, working, playing and praying in a targeted context (Wang, 2003). De Lange and Mitchell (2007) classify it as one of the visual methodologies for social change and is ultimately focused on promoting change at personal and community levels.

The study was done against the background that community participation in solid waste management has remained inadequate especially those living in peri-urban settlements of the city.

1.1 Zambian Situation on Solid Waste Management

1.1.1 Solid Waste Management in Informal Settlements

Solid waste if not properly managed can lead to outbreak of diseases from underground water contamination and unhealthy environments. The Lusaka City Council Waste Management Unit recognizes Solid waste as a nuisance and health hazard and convenes duties and powers to the local authority to manage the removal and disposal of solid waste management however in other communities or Cities, some communities have now begun taking advantage of solid waste.
Remember there are opportunities for reusing, recycling & (LCC, 2004).

1.1.2 Government Policies and Legal Framework on Waste Management

Zambia has a number of pieces of legislation that address the policy framework for solid waste management which a few have been discussed below.
Legal and institutional/administrative framework for good environmental waste management is either lacking or inadequate.

Further, not all the countries have consented the Multilateral Environmental Agreements (MEAs) on waste and chemicals and what is lacking are national waste regulations that are acceptable, sustainable and implementable in communities although a number of countries have a small section on how to deal with hazardous waste. Poor hygiene, lack of clean water and sanitation have been perpetuated by indiscriminate waste disposal in Africa especially among the urban poor (UNEP 2009).

According to ECZ 2008, Zambia has been in the process of establishing control systems for waste management strategies. Regulatory measures to ensure that the waste collected is disposed properly has been laid down in the Environmental Pollution and Control Act (EPCA) number 12 of 1990.

The Environmental Council of Zambia (ECZ) now called the Zambia Environmental Management Agency (ZEMA) had delivered a number of regulations relating to licensing of solid waste transportation and control at Landfills and waste disposal sites. In the same vain cap 535 of the law of Zambia states that the Local authority have the mandate to ensure disposal of waste generated of any form. A by-law expounded by the LCC on municipal waste management explained that all waste generators in the city needed to register with their respective waste management institutions for waste collection and pay the corresponding fees In the Local Government Act of 1991.

The Local Government Act of 1991, licenses the Lusaka City Council to take achievable and basic measures to maintain a clean and healthy environment in order to prevent the outbreak of diseases.

Better still, the Public Health Act No.22 of 1995 (PHA) stipulates that this act established in 1930 and repealed in 1995 is a superseding legislation for all the public health matters, solid waste management inclusive. This Public health act provides for the prevention and suppression of diseases and to legalize all matters related to public health issues in Zambia.

1.2 Problem Statement

Although Zambia has enacted policies and regulations for solid waste management, the full implementation of these provisions has yet to be achieved. This has resulted in the continuing challenges for local authorities, private companies and households alike.

The waste produced in informal settlements of Lusaka like Kanyama, does not compare to the efforts made by the Lusaka city council in an attempt to correct the situation of poor waste management (UNEP, 2009).

According to the Lusaka City Council annual report of 2004, the amount of waste generated stands at 301,840 ton, of which the peri urban areas stands at 72% of waste per year with the residential waste being at 81%. On average the waste per capita stands at 0.45kg/day.

As such, garbage disposal has remained one of the major environmental and health challenges for Lusaka residents particularly for those living in peri urban settlements of the city. Indiscriminate dumping of waste, and littering coupled with ineffective waste collection and transportation services, alongside with inadequate waste minimization are critical concerns. Less than 15 % of waste generated per day in peri urban slums is collected by community based enterprises implying that the remaining 85 % is in most cases, burned, buried, or illegally dumped and in a few cases taken by households to secondary sites themselves (LCC, 2004).

Poor Solid waste management pose a risk of disease outbreaks, pollution of water resources, soil and land contamination along with the proliferation of pests and vermin which will continue to poses health and environmental risks to the community unless urgent action is taken to improve solid waste management and current attitudes by local communities (Cointreau, 2008).

Chilinga, 2013 in his study of solid waste management in Livingstone reveals that despite the Keep Zambia campaign being introduced to improve solid waste in the country, Solid waste is still a huge problem in Livingstone. Chilinga reveals that the keep Zambia clean campaign has been unsuccessful and unacceptable by the residents because they feel it's a campaign that has just been imposed on them since there were not involved on the planning process up to the implementation. The study further suggested that in the future, the public should play a role in identifying solid waste solutions.

However not enough has been done to explore ways of exploring community participation using sustainable community participatory approaches in obtaining community based solutions in peri urban areas of Lusaka, a case of Kanyama.

1.3 Justification of Study

The study will explore ways of optimizing community participation in solid waste management in Kanyama settlement Lusaka, and the factors affecting community participation in solid waste management. The study will essentially contribute to knowledge in terms of solid waste management in informal settlements through using community participatory methods. Additionally, study will potentially come up with community based initiatives /practices that can help reduce solid waste management challenges and hopefully these initiatives once tested can be replicated in other settlements.

The study further seeks to inform local authorities and the relevant ministries such as the ministry of local government and housing based on the shared practical field experiences from this study on how they can improve the solid waste management service provision as well as provide information to understand the challenges and community based solutions in the management of solid waste.

Through the application of participatory methods, the study will potentially be able to identify the challenges and community based solutions of solid waste management. The study seeks to trigger community awareness, resilience and ownership of innovative community led approaches to solid waste management.

1.4 Theoretical Framework

Nutbeam & Harris, (2004), describes the PRECEDE-PROCEED as a structured health planning program model. The precede proceed model is a Community Based Participatory Research process model which aims to enhance program effectiveness by ensuring that the multiple and complex factors associated with the audience's health problems are addressed. This model is grounded in improving target populations quality of life using organizational and educational approaches. The study used this Model to promote community participation in solid waste management in Kanyama. Although this study only utilized the Precede part of the Model, the study does not go into detail to discuss the health outcomes of poor waste disposal and as such the epidemiological step is not discussed.

The model utilizes an ecological approach were the potential intervention targets include a person's environment in addition to his/her cognition, skills and behavior.

The model assumes active participation of the local community stakeholders in defining their own problems, establishing their goals, and developing their solutions. PRECEDE, is an acronym for Predisposing, Reinforcing and Enabling Constructs in Educational Diagnosis and Evaluation and this part of the assessment takes place before the intervention.

Overview of the steps of the precede phase

Step 1: Social assessment of the conditions surrounding poor solid waste management in Kanyama settlement.

- Explore community values and norms associated with non-subscription to the community based enterprises.
- Explore community perceptions of solid waste management in Kanyama
- Explore the community acceptability of waste subscription fees placed by the Lusaka city council and CBEs in Kanyama.

Step 2: Epidemiological assessment to create measurable health-related objectives

Step 3: Behaviour and environmental assessment to identify required change in behaviour and environment.

- To identify behavioral determinants that stand in the way of subscribing for waste collection services in Kanyama settlement.
- To identify environmental determinants that encourage residents to dump waste illegally in Kanyama settlement.

Step 4: Educational and ecological analysis:

To develop a plan to achieve the sub-objectives in step 3 through a consideration of:

- Predisposing factors for the desired change (Individual knowledge, self-efficacy, individual attitudes, beliefs and values)
- Reinforcing factors for the desired change: including how can a given behavior be encouraged in a community to the point of maintenance.

- Enabling factors for the desired change: the necessary conditions that must be in place for the behavior to occur.

Step 5: Administrative/policy assessment

- To assess prevailing policies operating in the field.
- To assess the capacity of CBEs and the resources available to effectively collect waste in Kanyama.

The steps explained above represent a logical systematic framework for the assessment and analysis of conditions for the current situation of poor solid waste management in Kanyama and the conditions that need to change in order to achieve the desired outcome. In the process of research, however, the steps will not be fully distinct and sequential, but will be seen as an iterative process of moving back and forth between the steps.

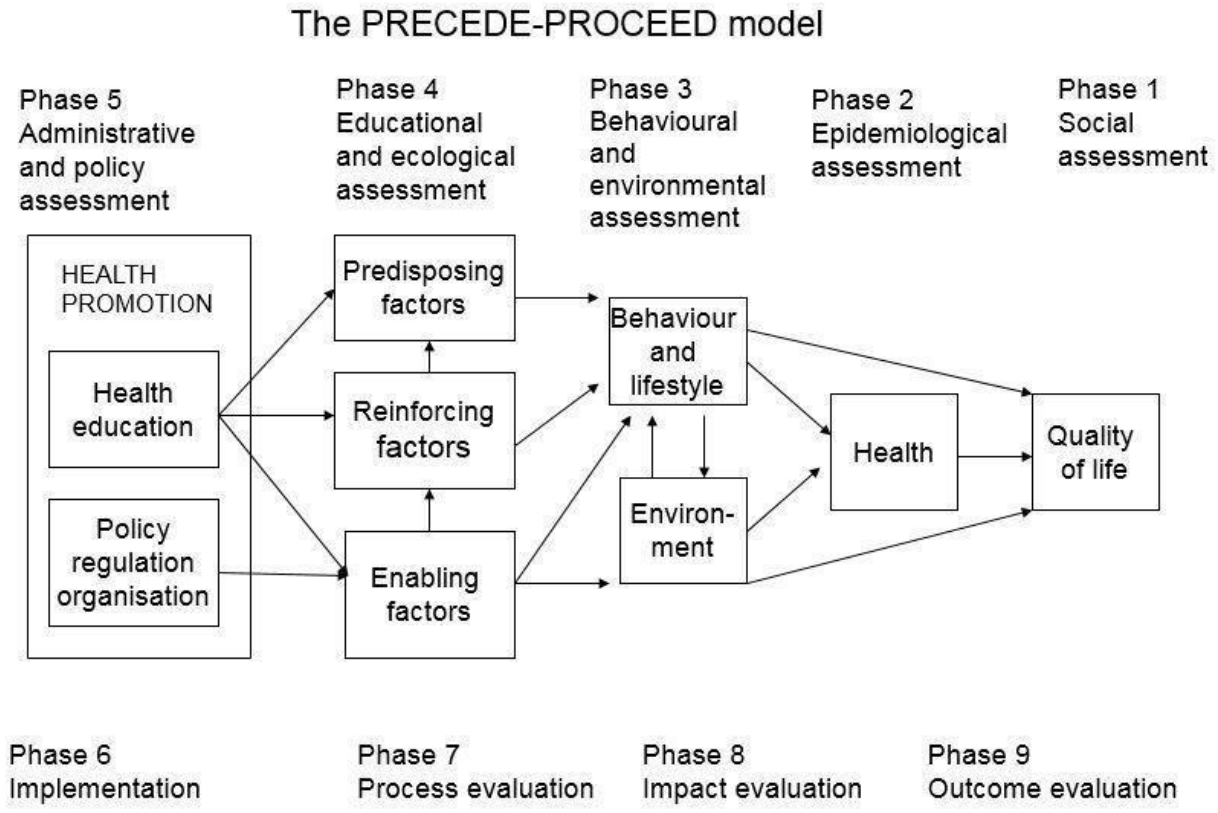


Figure 1. 1The precede proceed model: Source: ***Nutbeam & Harris (2004)***

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

Urbanization in Africa as well as in other parts of the world has come with so many challenges and as such countries are failing to cope with. Rapid urbanization has implied an increase in urban population which has translated to a rise in per capital solid waste generation. The challenge is that there is limited resources allocated to deal with the problem and because of this, waste ends up in undesignated places, people tend to dump it in open spaces, drainages, unoccupied plots and unfinished buildings. This problem is even more pronounced for people living in peri urban areas (Onibokun, 1999).

According to Medina (2010), Waste management becomes more challenging as population increases and type of waste is changing. Waste management practice needs concern not only for its generation but also for its inadequate practice. Population growth intensifies the pressure on urban infrastructure in many cities already overburdened with the provision of urban services. Many developing world cities lack the resources to meet the demand for services such as water, sanitation, and solid waste management. Many cities in Africa and India collect less than half of the waste they generate.

According to a UN-HABITAT report published in 2003, nearly one billion people worldwide live in slums, or about one third of the world's city dwellers. If present trends continue, two billion people could be living in slums by the year 2030. Future need for waste collection in slums, therefore, is likely to put additional pressure on municipalities already unable to provide the service to their current residents. Implying that as the quantity and volume of waste increases with an increase in city population (UN-HABITAT 2003).

The disposal and management of municipal solid waste is a global challenge, especially in developing countries due to its adverse environmental effects when waste is not properly collected, it will be illegally disposed of and this will pose serious environmental and health hazards to the community.

Solid waste management represents a prominent issue in light of the fact that it prompts land contamination if transparently dumped, water contamination if dumped in the swamps and air contamination if smoldered (Yasmin & Rahman, 2017).

The challenges of providing waste management services has become problematic for developing countries in general and this has been reinforced by urbanization which in most cases its rural urban migration which has led to the mushrooming of shanty compounds. The local authorities have since partnered with the affected communities to deal with the issue of solid waste management and this is mostly due to the physical and economic nature of slums. After so many attempts to deal with the problem, the local authorities opted for community partnership as an important element to the successful implementation of solid waste management programmes in peri urban areas of developing countries (ENPHO, 2008).

According to Medina (2010), he writes that low income communities lack refuse collection and as such, residents tend either to dump their garbage at the nearest vacant plot, public space, creek, or river, or imply burn it in their backyards. Uncollected waste then accumulates on the streets and clog drains when it rains, which in most cases cause flooding. Waste can also be carried away by run-off water to rivers, lakes, and seas, affecting those ecosystems. Alternatively, waste can end up in open dumps, legal and illegal. In the developing world, the most common disposal method of waste practiced therefore is open dumping which breeds various environmental and health hazards.

In an effort to understand factors leading to poor waste management, Asim et al.,(2016), conducted a study, in his study the residents of Gulistan-e-Johar showed more willingness to pay an amount for a proposed service. He stated that around 68% of the residents were found to be willing to pay an amount for up-gradation current services. Multiple factors were observed behind this willingness. Some of which were income level, surrounding awareness, education background and residents' participation in these matters. Implying that the residents were willing to pay for waste collection services based on the fact that the existing waste services changed.

Equally, Anschutz, 1996 is of the view that there are different things that determine the sustainability of solid waste management practices.

And those things included the availability of financial and human resources by the local authority and the upfront participation by communities in ensuring that their waste is properly stored and collected and disposed to the final dump site. Further, little community participation is one of the factors among several factors that contribute to the problem of waste accumulation in many developing countries. However, addressing how communities can solve the problem and come up with community led solutions is lacking.

In most communities therefore, there are places called community historical dumpsites where illegal dumpers identify open spaces or unoccupied land and begin to dump the waste at that point. These sights create breeding grounds for all forms of harmful insects and vectors which are responsible for disease transmission. Community historical dumpsites come as a result of lack of community participation in solid waste management, either the community does not subscribe to waste or they are not aware of proper solid waste management practices. Also, it means there is no sense of ownership when it comes to waste management disposal therefore adopting poor non hygienic practices to manage their waste (Tadesse, 2004).

Palmer, 1998 added that residents in their communities need to have an understanding of the environment they live in and the associated health problems that come with poor solid waste management. The study adds that, despite the problems in the communities being genuine distresses, the sole responsibility of their solution largely depends on the citizens themselves. For most residents especially those living in peri urban areas, the know-how on proper waste disposal seems lacking and bringing sanity in their communities can be achieved if the community itself and policy makers come up with a solution jointly. The gap in this study is however that, it did not assess ways of enhancing community understanding of how the environment plays a critical role in their health and ways the community can be involved in improving solid waste management.

A review of 144 water and sanitation interventions that was conducted in developing countries and the United States had estimated that using participatory approaches in research improved waste and sanitation and consequently resulting in a reduction in morbidity of diarrheal cases as well as improved hygiene and sanitation especially on drinking water quality. In the context of solid waste, community members and local leaders play different roles.

The roles played by the stakeholders relate to the different levels of participation in the community. Community members are seen to participate in solid waste management if they are involved in the consultation and administration of solid waste services. In most cases projects that involve community participation have a higher success rate compared to projects that do not involve the community. Involving the community members creates a sense of ownership and contributes to the sustainability of the project (UNICEF, 2010).

For solid waste management, it is very crucial that the community is actively involved in the process through out. From identifying the best initiative to the implementation of the suggested initiative. As such, when various actors in a community are involved in the process, there is likelihood of an increase in solid waste management subscription by households leading to a decrease in illegal dumping and a much cleaner and safe environment. Unlike for low income communities, the residents are usually left out when it comes to making decisions that affect their lives. In most cases, residents are usually involved at the implementation stage which makes most projects unsuccessful (Bernstad A.et al, 2012).

A study done in Ndola by Edema et al in 2012 reviewed that there was inadequate solid waste management in the town. Edema writes that open dumping as well as open burning were as a result of lack of sustainable solid waste initiatives. Community based initiatives that could solve the problem of poor solid waste disposal once and for all. In this study, the residents indicated that the sole responsibility of waste collection and disposal is given to the government through the Lusaka City Council, implying that the residents have no sense of responsibility when it comes to solid waste management. This study however was basically based on people's attitudes with regard to solid waste management and did not explore discontinuing poor solid waste management practices.

Ali and Snel in their study identified that communication breakdown between the Local authorities and the CBEs, defective waste collection and transportation systems has been one of the major factors that have contributed to limited community participation in this field of solid waste management. They suggested that perhaps establishing a close working relationship between the communities and the local authority can improve the situation. In his study, among several issues that were listed to be affecting waste collection, the study was only focusing on initiative (Ali and Snel, 1999).

In South Africa, Solid was management was perceived as a "technical" problem with no community participation and involvement in the past years. The mandate holders thought that they had the answers and the technical knowhow to bring out the desired change without the communities affected. With all their knowledge, their approach commonly referred to top down approach yielded disastrous results. The residents continued to dump waste in open spaces, unoccupied plots, streets, drainages, in roads as well as around communal bins set up for residential waste disposal (WRC, 1995).

The government of Zambia and cooperating partner in 2007 embarked on a community led total sanitation approach in Choma district of southern province to meet the millennium development goal for sanitation target of 66%. This approach yielded great results. The study reported that sanitation coverage had increased to 67% which prompted the government of Zambia to scale up the community led approach to the whole country. This is one evidence where participatory approach has yielded good results. However, in the field solid waste management, there is very little information of studies that have used participatory methods to address the problem of poor solid waste management especially in peri urban communities struggling with ways to promote community participation (UN-HABITAT, 2007).

In most cases, the local authority and the communities enter into a public private partnership where the community provides efficiency and expertise while the public sector provides public accountability and planning. This however, has not solved the problem in its totality there is still evidence of indiscriminate disposal of waste by the residents in these areas. Poor waste management has continued to be the talk of the day despite having this partnership with the local municipality who are still struggling with limited human resource and other capacity related problems (Ahmed and Ali, 2004).

Due to an increase in slums, the Lusaka City Council with support from the Danish Government through Danish International Development Agency introduced the Community Based Enterprises (CBEs) who are responsible in bridging the gap of waste collection which the mandate holders have failed to close. Despite bridging the gap, the study did not understand why CBEs have continued constantly faced resentment from these communities (DANIDA) (LCC, 2004).

A study conducted in Garden Compound by Milanzi in 2002 was based on the views of community participation in solid waste management. The study reported that there was willingness to pay for solid waste collection services by the community members, the study also reviews of the effects of the Community led participation research which yielded positive behavior change. Although this study reported willingness to pay for solid waste management services, it does not necessarily mean that residents had started paying for waste collection services. However, the community was not asked to state what they felt would work better to address the problem of solid waste management in their area besides asking them if they were willing or not. The study further reviews that the local leadership of the settlement now known as Ward development committee organized the community working hand in hand with the Lusaka City Council for the transportation of the waste to the final dumpsite for disposal, but it so happened that the Lusaka City Council had their own challenges of secondary transportation of waste to the dumpsite. This lead to the discontinuity of the programme.

A study done by Munthali (2006) on community based solid waste management strategies in Kamanga compound was focusing at identifying the effectiveness of the LCC in partnering with the community based enterprises that are responsible for waste collection in peri urban areas. The study revealed that there was adequate legal framework in place but the LCC lacked capacity to enforce the available laws that compel all the residents to use and pay for solid waste management system. LCC lack adequate human resource to facilitate adequate provision of the services as well as funds, equipment to facilitate collection of waste from these areas. This in turn, contributed to a large extent to the accumulation of waste especially in Kamanga compound where the study was conducted. The efforts of the Municipality to bring sanity in the communities is proving not to be workable as communities are left out in the process of looking for answers to find a sustainable answer to the problem. This study however, despite looking at the effectiveness of the LCC CBE partnership, it did not address the alternative solutions for the community that could lead to enforcement of the existing legal framework.

According to Ali and Snel (1999), he writes that different cities in developing countries have adapted the community based enterprises concept of supplementing the efforts of the local authority for example; Ouagadougou in Bukina Faso, Abidjan in Ivory Coast, Bangalore and Madras in India and Nairobi in Kenya.

This type of system is assumed to take into account three different actors, the households, the waste collectors and the CBEs that facilitate the process. This is not a new initiative it's something that has been used in several cities and replicated in others, however sometimes the setting does not always allow this initiative to yield the anticipated results. For example, the success and failure of this concept largely depends on factors such as household's willingness to pay for SWM services and the support from the local authorities through the provision of secondary collection equipment and transport to the final dump site. Peri urban communities are characterized by the same problem of waste accumulation. Ali and Snel are of the view that lack of willingness to pay for waste collection services and lack of motivation by communities to participate in the initiative.

Also there has been poor linkages between the local authorities and the CBEs to encourage continuity of the partnership, more often the CBEs suffer financial losses as the operational costs outweigh their incomes, the equipment used are mostly problematic and as such they fail to collect the waste generated from households on time and this in turn makes households to start shunning the services provided by CBEs and revert to indiscriminate dumping. Evidently, communities are not bothered about the lack of capacity by CBEs because they have a number of illegal options to disposal their waste since they are not part of the process of solution finding (Ali and Snel, 1999).

Additionally, A study done by Anschutz, 1996 indicates that for solid waste management practices to be sustainable, it should be defined by availability of financial and technical resources to the local authority, implying that there should be a mutual relationship between the mandate owners and the communities in order to stimulate active participation from the communities.

Photo voice oftenly used in participatory studies was used in this study. A study done in Usoma in western Kenya, used photo voice as a community based research tool for changing water, sanitation and hygiene behavior. The study reported that the photos served as prompt to some behaviors and practices in the community. Despite the practices having existed for too long, some of the participants were not aware certain behaviors and practices in the community. The photographs they took helped them realize how their everyday practices have an effect on their health. Some participants expressed how the discussions from the photos helped them to be more aware of the behaviors beyond what they were familiar with (Bisung et al. 2015).

Photo voice as a core method in participatory research promotes social change by equipping communities with the ability to participate in identifications and analysis of their local problems. Using photography, the participants are able to identify, represent and discuss and find solution to their everyday environment and health problems. Solid waste is not an exception as it evidently results in serious health problems **(**Bisunga et al. 2015).

2.2 Research Question

- How can the community effectively participate in the management of solid waste in Kanyama settlement, Lusaka?

2.3 Study Objectives

2.3.1 Aim

- To explore ways of optimizing community participation in solid waste management in Kanyama, Lusaka

2.3.2 Specific Objectives

1. To investigate the social factors affecting community participation in solid waste management in Kanyama, Lusaka
2. To Identify environmental conditions affecting community participation in solid waste management in Kanyama settlement, Lusaka
3. To explore Institutional and Organizational opportunities for community participation in solid waste management in Kanyama settlement, Lusaka
4. To develop a joint community participatory action plan for solid waste management in Kanyama, Lusaka

CHAPTER THREE: METHODOLOGIES

3.1 Study Design

The study was a community participatory action research that employed primary data collection. The study methodology was strategically chosen to ensure that the community participate not only as informants but as stakeholders who have a keen interest in their communities. As such the methodogy chosen has potential to empower the community and trigger the necessary steps to improving the living conditions in Kanyama.

This approach was necessary for this study because it facilitated mutual learning, community capacity building and collective action by working closely with the community affected. Additionally, the research facilitated collaboration and responsibility sharing between the researcher and the people in the community there by promoting a sense of ownership and sustainability (Wallerstein et al.2010). The method was strategically chosen because it enhances community participation as well as helping the community understand and appreciate the dynamics of solid waste management.

3.2 Study Setting

The study was conducted in Lusaka district focusing on a peri urban community of Kanyama settlement in Lusaka. Kanyama is one of the oldest slums in Lusaka and is located just on the edge of the city (Mwape, 2007; Resnick, 2011). Kanyama is one area that has had the most frequent floods, experiences the most health problems related to floods such as cholera, malaria, dysentery and also typhoid. The settlement is accessible by road despite having poor roads within the settlement. Kanyama has a population of about 169,253 equivalents to 36,834 households. (CSO, 2010).

3.3 Study Population

The study population included the community residents, local municipality, the ward development committee, the community based enterprises, the waste management association, a representative from the Kanyama water trust and representative from Care Zambia.

Table 3. 1 Study participants

Source	**Data Collection Method**	**Number Of Participants**
Community	Transect walk. FDGs (3FGDs,12 in each group)	12 36
Kanyama Ward Development Committee	KII	01
Kanyama Community Based Enterprises	KII	03
Waste Management association	KII	02
Kanyama Water Trust	KII	01
Lusaka City Council	KII	01
Care Zambia	KII	01

3.4 Sampling and Sample Size

Purposive sampling was used to select Kanyama because the settlement is one of the largest urban poor slum presumed to have poor solid waste management practices despite the ongoing solid waste service provision by the community based Enterprises. Kanyama also houses an estimated 320 000 people thereby making it the biggest also settlement pursuant to the population size. In addition, Kanyama is one of the areas where various NGOs have piloted projects in water, sanitation and hygiene and as such it should ideally be one of the cleanest informal settlement in Lusaka.

Purposive sampling was used to select study participants for the interviews based on their knowledge and involvement in solid waste management issues. Ten (10) Key informant interviews. The participants : the Lusaka city council official from the site office in Kanyama as well as from the head office; the water trust from Kanyama; the ward development committee

representative; the community based enterprises; the waste management association representatives and an organization working in waste related project in the settlement

Participants for the transect walk and Photo voice were selected using the Snow-ball sampling method. The transect walk consisted of 12 participants primarily community members because the study was a purely community based and views of the ordinary community members were of great relevance as they were deemed representative of the entire population. The photo voice had a total number of 36 participants, 12 participants for each group with a total of 3 groups. In each group there was equal representation of 6men and 6 women respectively. Besides, in each group of the photo voice, there was one representative from the Zone leader, one representative from WDC, Two representatives from the CBE and 8 ordinary community members. A total of 12 women between 26 and 65 were recruited for the study. The sample size was very suitable to give rich information in terms of photographs as well as narratives and adequate descriptions of the issues under research as well as having a manageable number of photographs for the focus group discussions. The first group to work with was women, therefore, two women were identified based on their involvement in solid waste management service provision in Kanyama. The two ordinary women then contacted other ordinary participants who have been living in Kanyama for over two years and would want to be involved in the study and the same was done with the male group.

3.5 Data Collection

Before commencing data collection, the data collection tools were pretested mainly to come up with an ideal sample size as well as to determine the effectiveness of the tools to collect quality information. When a point of saturation was reached in the pretest, the sample size was determined. The research employed a Community driven participatory approach to explore community participation in solid waste management in Kanyama settlement in Lusaka Zambia**.** Using this approach, data was collected through a meandering transect walk, Photo voice, FGDs and in-depth interviews.

Before commencing data collection in the community the researcher arranged for an engagement meeting with the area Councilor, the ward development committee, and community zonal leaders and some ordinary community members to discuss the broad objectives of the research in the community and to seek approval from community leaders.

During the meeting, the purpose of the research and the different types of data collection method involved in the study were discussed in details. Following an understanding of the objectives of the study, the researcher handed over two written consent forms to the area councilor to firstly: permit the researcher undertake the study in the community and secondly to authorize the researcher and research participants to take photos in the community during the study. The area councilor took time to read through the presented written consent forms and endorsed his signature and office stamp to permit the researcher to undertake the study in the community as well as to take photographs of the community during the study period. The meeting took about an hour, because the attendees had a number of questions to ask about the study and how they were going to benefit from it.

During the same meeting with the community leaders, two community leaders were elected to work with the researcher to enable the researcher access and recruit participants for the transect walk, and photo voice. The two community leaders helped the researcher identify a team from the community to take part in the study. A community meeting was set to introduce the researcher, the objectives of the study to the recruited participants, the data collection methods, ethical considerations in the study and signing the consent forms to all the recruited participants for the transect walk and photo voice.

During the meeting, the researcher introduced herself and allowed each of the participant at the meeting to introduce themselves, their names, which zone they were coming from and position they hold in the community if they did so. After creating the group, the recruited participants indicated a date to meet the research to start the data collection process (photo voice).

3.5.1 Training of Assistants

Participants for the photo voice were trained on how to become ethically conscious photographers, the participants were trained on how to obtain consent from individuals, households when taking pictures in the community. They were trained on the process of taking pictures, the use of a digital camera. The training was conducted where all the participants managed to hold a camera and photograph various points where the meeting was held.

The training took an hour and was followed by collectively setting a date for the actual community research photo voice process after participants had an understanding of what they were actually going to take photographs of (Wang 2006).

3.5.2 Transect walk

The study began the data collection with a transect walk. The walk was aimed to assist both the participants and researchers identify neediest problems within the settlement. The transect walk taken was a meandering transect walk where the researcher and participants walked together in certain sections of the community to have a glimpse of everything that was happening in the community in terms of solid waste management and community participation. The team of 12 for the walk consisted of both men and women from the community of different ages. The researcher had a set of parameters with which she was observing, taking notes and taking some pictures during the walk. This was also done to familiarize the researcher with the study site, the daily practices and the behavior of the community with regard to participation in solid waste management. During the transect walk, within the participants, a "leader" was chosen to lead the researcher and other participants while the other participants observed and explained what they saw to the researcher.

3.5.3 Photo Voice

Photo Voice was the third and last data collection method used to collect data in Kanyama. The first group the researcher met with was the women's group for the photo voice method. A group of 12 women was met on an earlier agreed date to start the process of data collection. The process of photo voice began with the training of participants to become ethically conscious photographers. The participants had already signed the consent forms in the earlier engagement meeting and were preview of what the exercise (study) was all about although the researcher reminded them what the study was all about. During this training, the participants were helped with the definition of photo voice and how it works as a data collection tool (Wang, 2006).

3.5.4 Focus Group Discussion

In photo voice, the focus group discussions were used to get in-depth experiences from the participants with reference to the photo graphs that are gotten from the field. The photographs taken by the participants during the research process are used for group discussions.

During the discussions the photographs taken are spread on a large table and participants sit around the table to broadly discuss their experiences and reactions (Bisung et al 2016)

3.5.5 Key informant interviews

Purposive sampling was used to select study participants for the interviews based on their knowledge and involvement in solid waste management issues. 29Male and 29 Female participants alike participated in the study. The KII recruitment process was equally done with the help of the elected leaders from the first engagement meeting. The interviews were done using unstructured questionnaires. Participants for the key informant interviews where selected and letters where written to them to invite each one of them to participate in the study. The researcher then followed up with the letters from each participant to schedule a day for each interview. The interviews were conducted on different days as per appointment with the informant.

The interviews were ranging from 45minutes to an hour The Lusaka City Council officials from the waste management unit, community based enterprises ward development committee leaders, and the waste management association and the community water trust scheme were the key informants. Consent was obtained from all the participants before each interview. The aim for the Key informant interviews was to help explore Institutional and Organizational opportunities for community participation in solid waste management in Kanyama as well as enable the researcher to document the factors contributing to current solid waste management systems to reduce the occurrence of diseases due to indiscriminate dumping.

3.6 Data Management and Analysis Plan

The data was checked immediately after collection. Focus Group discussions and interviews were audio recorded with permission from the participants and transcribed verbatim, the interviews were 30 to 90 minutes long. The participants expressed themselves in Nyanga and Bemba. The information from the transect walk was recorded through handwritten notes while the Focus group discussions and KII through voice recordings. Qualitative data analysis for the photo voice involved an iterative, multi-stage, collaborative process between the participants and researcher (Freedman et al., 2012). For each Focus group discussion consisting of 12 participants, Photographs were coded according to the themes identified by participants. First, after each photo voice analysis session, participants were asked to summarize themes that emerged.

The researcher and research assistant recorded field notes to capture their reflections on the emergent themes. The handwritten notes were typed and analyzed manually using a summary report. Secondly, 6 participants reviewed all 24 photos, titles and captions in the collection. Participants were asked to individually record the two most outstanding solid waste management problems preventing community participation reflected through the photo voice collection. Participants then worked in teams to conduct a pile sort of their data to develop cross-cutting themes (Weller and Romney, 1988). For data verification, the research assistant repeated the pile sort process to have an outsider perspective on the data (Padgett, 2008). Both sets of pile-sorted data were compared to the summary report developed in Step 1 to identify areas of overlap and agreement. The summary report was revised based on both feedbacks from the participants and the research assistant. All photo voice participants were invited to review the revised summary report; all 12 participants took part in member checking, editing and approval (Powers et al., 2011). Participants also identified illustrative photos relevant to each theme. Finally, the researcher and the research assistant with the help of OM and HH, including three photo voice participants, examined the thematic analysis to identify relevant theoretical constructs related to the data (Freedman et al., 2012).

3.6.1 Action plan and Process of action plan development

The photo voice process (including training, photo taking, and group discussion) gave participants an opportunity to discuss and plan future interventions. Though proposed actions varied in nature, most participants emphasized the need to involve community leaders and the whole community. The kind of planned actions explored at the photo voice discussions exemplified the importance of Community Based Participatory Research methods in capacity building and social action. The participants made decisions about which issues were important to them and facilitated their participation. To start with the participants planned for a meeting.

- The participants held a joint meeting consisting of the first group (women only), and the second group (men only). The joint meeting was meant to make participants come up with a long term plan that can be used to enhance community participation in the settlement. In this particular joint meetings participants sat in a circular manner to ensure maximum participation. During the meeting, participants introduced themselves.

- Having an understanding of what the meeting was all about, they started by doing a stakeholder analysis, that is listing all relevant stakeholders in the community that can help to enhance community participation.

- The participants then started listing the major solid waste challenges in the community which were identified during transect walk and what was coming out of photographs during various group discussions.

- On each challenge listed, the groups decided to brainstorm on the possible solutions. The participants discussed health promotion activities among many others like locally available human and natural resources to carry out the implementation of the plan. Actions that involved decisions to make to move forward were handed over to other stakeholder institutions mandated to give permission to do so. These points were written down by the researcher on the flip chat.

The plans generated were purely community driven and community themselves through this level of engagement identified other stakeholders to support implementation of some planned activities. In their action plans as shown below, the planned actions were listed based on the identified solid waste challenges. The photograph below shows action plan developed. The action plans were developed using participatory approach.

3.6.2 Limitation of the Study

Data collection was collected during the onset of cholera time in Kanyama and this put the participants during FGDs at risk of getting sick as such the data collection was put on hold. The four FGDs conducted may not produce sufficient information to represent the entire community. There is need to do a follow up study to implement the plan generated by the participants to determine the workability of the solutions proposed.

3.7 Ethical Considerations

The study involved humans and solid waste images of the community. The human rights needed to be protected. Clearance was obtained from the Ethics committee UNZABREC with a **REF.NO.050-06-17** to allow the researcher to carry out the study. Permission was sought from the area councilor to conduct the study in Kanyama and also approval to take photographs within the community on solid waste management related matters using a photo release consent form.

A Photo release consent is primarily an instrument used to obtain permission to take photograph and also to use the photographs of solid waste management related issues of the community in the discussions to obtain this document, the Area Councilor was taken through what the research is all about and the core method photo voice, what it is and its significance in this particular study and how this study may contribute to the body of knowledge.

Written Informed consents were also sort from the respondents after explaining the purpose of the research, its potential benefits and the risks that may arise. Explanations were made on how the information collected will be used while assuring them that the information would be confidential.

Privacy and confidentiality was assured to all the participants as no real names have been used in the report and the results could not be used for any other purpose other than of academic use. All photographs have been assumed in the spirit of confidentiality with the understanding that anything discussed in focus group discussions was strictly private.

For Privacy and fair representation, potential invasion of privacy was one of the ethical issues that arose while taking pictures in the community.

However, this risk was mitigated by training the research participants on how to protect and respect the privacy of the people/households in the process of taking pictures. When the participants were out there in the field taking pictures, the researcher had little to no control over what they were doing even how they were taking the pictures and as such to mitigate this harm the participants has an adequate training on the ethics of taking pictures of human subjects while handling waste or households or any waste related photographs. The identity of all the participants in the study are anonymous, however when dealing with photographs, it goes without saying that a picture of a household showing a face of someone will appear blurred. However, during the process of photographing, the participants presented a consent form where that particular person/ household in the photograph signed to allow the use of the images in the study and/or blur the pictures of the person/ household so that the person remains unidentified. Better still, research participants were encouraged to take pictures of the environment and not human subjects.

The information sheet was used to inform participants that the study was voluntary and if they felt like pulling out they would be free to do so at any time.

The research participants were assured of confidentiality and their autonomy was maintained. The study gave Eligible research participants in the study an equal opportunity to decline their participation.

There was no provision of any direct benefits to the participants during the study. However their responses and participation will generate information that will not only contribute to scientific knowledge but also contribute to solid waste service provision within the community, the community may be able to use the research finding to lobby government and other stakeholders to come into play to correct the situation.

CHAPTER FOUR: PRESENTATION OF FINDINGS

4.1 Introduction

The following chapter discusses the key findings / results of the study from the transact walk, photo voice and the focus group discussions

4.2 Socio-Demographic Characteristics

4.2.1 Profile of Participants

The study was conducted in Lusaka, Kanyama settlement. The study constituted of participants in a range of 26-65 years old. The table 3 shows the distribution of respondents by gender and sex.

Table 4. 1 *Characteristics of participants by age and sex*

Data collection Method	**Age**	**Sex**		**Total**
		Males	Females	
Transect Walk	28-48	6	6	12
Photo Voice(3FGDs)	26-65	18	18	36
KII	32-55	5	5	10
TOTAL		**29**	**29**	**58**

The table above shows that a total of 29 males (50%) and 29 females (50%) participated in the study. The study showed an equal number of Females and Males participated in the study. For the photo voice, SHOWeD Coding framework was used (Freedman et al., 2012). See Table 4 in the Appendix. For the themes, see table 5 in the appendix.

Table 4. 2 *Description of key informants by Gender*

Description of Key informants by gender.	**Sex**		**Total**
	Females	**Males**	
NGO	0	01	**01**
Waste management Association	0 1	01	**02**
Local authority	0 1	01	**02**

Ward Development Committee	01	0	**01**
Community Based Enterprises	01	02	**03**
Kanyama Water Trust	01	0	**01**
TOTAL	**05**	**05**	**10**

4.3 Social Situation

From the qualitative data collection tools used, the Ward ten community needs to ensure that community members are mobilized into self-help groups or watchdog groups for various developmental needs and to ensure that the community is not only in the forefront of the journey to change their living conditions but totally own the process. There is need to tap and take advantage of the knowledge and resilience of the community through ensuring effective and genuine community participate as opposed tokenistic and exclusionary top down approaches favored by local authorities and government.

4.3.1 Collective Action

Participants expressed the importance of working together with government in decisions that involve the affected community. By working together, the community will have a sense of ownership and maintain the community by taking full responsibility of their everyday activities with regard to solid waste management. Participants perceived community participation as an important aspect that could be built upon lasting solutions to the problem.

> *"To finish this problem of poor waste disposal, both we the community and the government should work together."* (FGD 1, Kanyama Ward 10 Community resident)

4.3.2 Practices and Altitudes

The community has adopted certain practices and altitudes that do not support proper solid waste disposal. The community is for example not aware that solid waste could be a source of livelihood for them and could potentially create employment.

The study also found out that some illegal practices existed for long, some participants were not aware of them and during the discussions, they indicated how the photos made them realize the influence of some everyday practices, behaviors and attitudes on their health.

*"As you can see in the photo, the residents continue to dump their waste on already overflowing skip bin. This is sad because even when they see the bin is full they still dump there. That's a CBE worker trying to put the waste inside the overflowing skip bin which obviously looks impossible to do."(*FGD 2, Kanyama Ward 10 CBE)

This photo voice exemplar was illustrative of waste disposal practices and attitudes from community members. Illegal practices of dumping waste in drainages and communal collection centers create serious environmental degradation. The attitude of the community with regard to the management and disposal of waste is not suitable and the community also needs a lot of awareness on safe and correct means of disposing waste and reusing and recycling waste.

"The photo tells it all, that is a drainage outside someone's house and there is evidence of burning and continuous disposal of waste there. I am not sure if it's the owner of the house or the passerby's. Otherwise that's not the only house doing that." (FDG 1, Kanyama Ward 10 Resident of Kanyama)

Figure 4. 1: Common waste disposal practices and disposal methods Kanyama settlement.

4.3.3 Community Willingness to Pay for Waste Services/Capacity to pay for Waste Services

Another key finding of the study is that the majority of the community members despite being underprivileged and predominantly unemployed, understand and are willing to pay for solid waste collection especially if the CBES improve on the quality and are consistent in collecting garbage. Intricately and intimately linked to this finding is the need for innovative financing mechanism to ensure that each and every household contributes towards solid water. The Tariff bundling mechanism as method of financing solid waste was highly recommended by the community as it makes easy for people to pay for solid waste while paying for water. The participants in the study indicated that they are willing to pay an affordable amount if that's what it takes to have a clean and disease free community although owing to the fact that CBEs improve their routine of waste collection.

Although in the same discussion some participants quickly jumped in to state that they are poor and cannot afford to pay for the service. They were however in the minority. They cited Figure 2 which shows waste illegally dumped by some community residents as a sign of lack of capacity to pay as well as lack of seriousness by the CBEs.

> *"In Kanyama people do not refuse to pay, they are willing but they are not encouraged at all. One ,even if they pay, the CBE will take time to come and collect and non-subscribers will start dumping at the same collection center and two because their neighbors are lazy to pay or rather they claim to be poor. So we do what everyone is doing.* "(FGD 3, Kanyama Ward 10 Community Leader)

In addition some residents indicated that they have little capacity to pay for waste services regardless the amount imposed for waste collection. While the study deed indeed discover a very sad state of affairs in Kanyama the findings also revealed that hope is not lost in the ward, most residents indicated willingness to pay for waste services especially if community based enterprises improve provision of services in the area.

> *"Some people are old and are struggling to pay. They are dumping behind people's wall fence to shun paying as depicted in figure 2. Some People cannot afford and are poor."* (FGD 2, Community member)

Figure 4. 2: ***An*** **illegal dumpsite created by non-subscribers in Kanyama.**

4.3.4 Household Knowledge Level on Solid Waste Management

The findings of the study indicated that the community residents have limited knowledge about solid waste management compared to community leaders who seemed well informed about matters of solid waste management. The participants in the three focus group discussions after analyzing the photographs clearly indicated how poor management of waste had brought about ill health in the community.

> "*Some people if not all here in Kanyama know for sure that they are not supposed to dump waste anyhow that's why you find people putting in sucks nicely away from their homes but in or near other people's homes. What they don't understand is ways of reducing the waste generated at household level. If we all knew about waste recycling and separation, you will see a big change here." (*FDG 1, Kanyama Ward 10 Community Leader)

Another participant from a different group stated that,

> "*What is needed to improve the current problem is sensitization. A lot of sensitization so that people can fully understand. We can't assume they know when they actually don't know." (*FDG 2, Kanyama Ward 10 Resident of Kanyama)

4.3.5 Beliefs/Community Perceptions on SWM

Beliefs and community perception on solid waste management in the community is one of the factors that affects community participation in SWM. As shown in figure 3, the study shows that, in as much as the community have some knowledge about the environmental and health problems that come with poor waste management, the community regards waste as "Dirt" something once generated cannot be used for anything else but thrown away from their space. As a matter of fact, the participants in the study revealed that the community is not very well abrassed with information on how else waste can be used apart from taking to the landfill.

A participant from an FGD stated that:

> *"As it can be seen in the photo below most of that waste can be recycled and sold to make an extra income. The cud boxes, bottles and plastics can be reused. But the perception is that waste is dirt that's why we continue seeing people not paying attention to how they disposal of waste."(*FDG 3, Kanyama Ward 10 Ward Development Committee representative)

Figure 4. 3: Recyclable waste dumped at an illegal dumpsite in Kanyama

4.3.6 Penalties for Illegal dumpers

The findings of the study reveal that the community is aware of the laws about solid waste management and the implications of not following them. However in one FGD a participant had this to say,

"*Those so called laws and policies are just on paper and we know them. If someone is caught dumping waste just in front of this building, and we decide to take him or her to the police, nothing will be done because even the police don't do anything."* (FDG 2, Kanyama Ward 10 Resident of Kanyama)

4.3.7 Amount of money residents are willing to pay for SWMS

The finding of the study revealed that K 30 is the amount of money currently being charged per month which in relative terms is very affordable hence majority of the community may afford if only there was an effective system that compels people to pay as well as ensuring that the CBEs reciprocate by collecting the waste on time. In one FGD, a participant had this to say,

"*Money is not a problem even K50 per month some of us we can afford to pay. Just give us a good service and also work hard to apprehend those that don't want to pay.* "(FDG 3, Kanyama Ward 10 Resident of Kanyama)

In another FGD, a participant had this to say,

"Life has become expensive, we are unemployed and poor, our children have no jobs, and I don't think some of us are in a position to even say how much we can bring towards waste collection."(FDG 1, Kanyama Ward 10 Community Member)

4.3.8 Responsibility of Waste Disposal at Community Level

The findings from the 3 FGDs conducted indicate that, it's both the responsibility of the Municipality and the residents to collect waste in the community. Participants stated that the community should not be treated as a beneficiary but a stakeholder in waste management while the municipality should ensure that waste finds itself at the final dumpsite.

In one FGD, a participant stated that,

"As you have noticed in this photo, that's my CBE collecting waste from a collection center. The community has abused our collection center by throwing waste there. They think its council who comes to collect the waste. "(FDG 3, Kanyama Ward 10 CBE)

Figure 4. 4: Workers collecting waste from a waste collection point

4.3.9 Existing alternatives for Disposal of waste in the Community

The findings from the FDGs brought a very interesting factor. It was revealed that existing alternatives for solid waste disposal in the community has contributed largely to lack of participation in SW related matters. As shown in figure 5 and 6 the participants revealed that residents opted to dump waste in open spaces, unfinished buildings, drainages and roads and burn as the most available and affordable alternatives. A participant in one FGD stated that;

> *"The fact that people can burn freely or dump at night in roads or overflowing skips, what can motivate the community to start paying? No one I know of has either been seriously charged or imprisoned for burning, burying or illegally dumping, people have so many illegal options"* (FDG 1, Kanyama Ward 10 Resident of Kanyama)

Figure 4. 5: Common Waste disposal methods in Kanyama

Figure 4. 6: Unoccupied plot filled with illegal waste disposal

4.3.0 Roads and Drainage System

The findings of the study from the meandering transect walk reveal that drainages are usually abused by the community by throwing waste in them as seen in figure 9a and 9b and when it rains for example water becomes stagnant and allows for breeding of harmful bacteria.

Residents have taken advantage of some of the unattended drainages to dump waste at night. The road network within the settlement is a huge problem for CBEs as most of the houses have been constructed where a road should potentially be.

A participant in a discussion stated that;

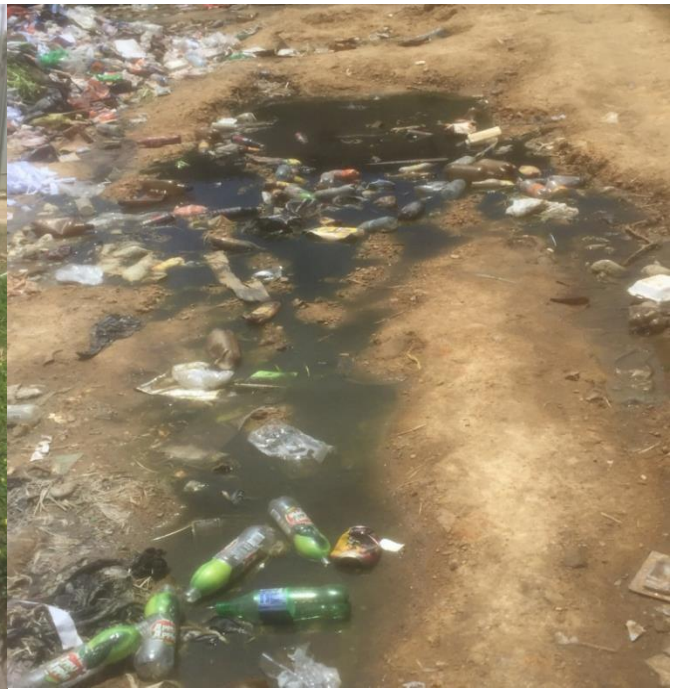
> "*The poor road network especially inside the settlement does not facilitate trucks or tractors to carry waste from one household to another. Worse still when it rains there is no way any CBE can be able to collect waste from certain households; some households are never reached at all."* (FDG 1, Kanyama Ward 10 resident)

Another transect walk participant has this to say;

> *"The study revealed that Poor waste disposal in drainages has massively contributed to neverending problems. The poor road network and drainages have resulted into regular flooding which in turn have led to outbreaks of diseases like Cholera, Malaria, typhoid, and dysentery even with that, people still don't change their attitudes."* (FDG 3, Kanyama Ward 10 resident)

Figure 4. 7: Clogged drainage with waste

Figure 4. 8 Waste thrown on the road



4.3.1 Indiscriminate Disposal

The findings of the study show that Indiscriminate Disposal is one of the predominant waste disposal methods in the settlement as seen in figure 8. Some residents dispose of this waste near or behind housing units, in the drainages and ditches, into the neighbor's primary storage receptacles and at the skip or waste containers at the secondary storage point for those areas where this is available.

Figure 4. 9: Illegal Dumpsite in the Community

4.4 Existing Environmental Conditions

From the Transect Walk Kanyama has a very complicated topography typified by the rock outcrop that causes seasonal flooding in the community. Over the years Kanyama population has grown in terms of its population. Particularly, respondents indicated that due proximity of the settlement to the CBD as well as improvements in various infrastructure within the settlement, the settlement continues to attract many people besides cheap houses to rent. Absence of proper solid waste management systems is a huge challenge that has come with the growing numbers of people.

4.4.1 Community created Illegal Disposal Sites

From the meandering transect Walk, The finding of the study indicate that Kanyama settlement has no formal disposal sites within and the community relies on the Chunga dumpsite for final

disposal of their waste. The CBEs are able to do primary as well as secondary disposal once in a while but have always had challenges with the secondary disposal due transportation challenges. As such residents tend to create illegal disposal sites (collection centers) within the settlements which are frequently abused by freelance collectors and non-subscribers by dumping their waste at night. The responsible CBEs in such cases are forced to clear all the waste. Figure 7, shows an open space behind the market which has been abused by marketers by indiscriminately dumping waste, and as such both environmental and health problems continue to be on the rise.

A participant in the transect walk stated that;

> *"As you can see in this market, marketers selling food which we eat, have created their own disposal sites behind the market and no one is doing anything about it. "(*FDG 2, Kanyama Ward 10 Zone Leader)

Figure 4. 10: Open Space behind one of the Markets in Kanyama an illegal dumpsite for marketers

4.4.2 Population Growth

During the transect walk, a participant revealed that over the years Kanyama population has grown in terms of its population size. The proximity of the slum to the CBD as well as improvements in various infrastructure within the settlement, the settlement continues to attract many people besides cheap houses to rent. Absence of proper solid waste management systems is a huge challenge resulting from growing numbers of people.

> *"People have increased in Kanyama, you can see for yourself we could have seen many CBEs coming on board.*" *(*Transect walk, Kanyama Ward 10 resident) Another participant added.

> *"A lot of people are coming to live in Kanyama because we have a police station, clean water from the kiosks, electricity and its near to town, you don't need a bus but just walk and you are in town center."* (Transect walk, Kanyama Ward 10 resident)

4.4.3 Housing Arrangement

The transect walk revealed that the housing arrangement is problematic. It is not easy to tell where the boundaries for most plots in the locality are. This has created problems for the CBEs when it comes to navigability within the settlement when collecting waste. Houses are constructed where a road is supposed to pass, implying that some households are hard to reach during waste collection therefore reducing on the demand for solid waste service and allowing for creation of illegal dumpsites. In view of this, Kanyama area has a mixture of houses- some good buildings in wall fences and others that are substandard with hardly any space in between.

A CBE participant during the transect walk had this to say;

> "*Houses are clustered; you literally have to pass in someone's kitchen to move from one house to another. This has brought about difficulties in solid waste management provision because we rely on wheelbarrows to navigate certain households."* (FDG 2, Kanyama Ward 10 resident)

4.5 Institutional and Organizational Capacity

Respondents indicated that inadequate funding to support solid waste management in peri urban areas is not a new thing.

The Municipality largely depends on donor funded money to supplement the little resources directed to solid waste management. Whilst the opportunities to collaborate with other NGOs are present, the problem of indiscriminate dumping of waste is still a huge challenge. The respondents talked about the absence of adequate human resource as well as logistical support to effectively deliver.

4.5.1 Availability of funding for SWMs

> "*Funding is inadequate and the Lusaka City Council has both human resource and transport challenges. We have engaged the CBEs in informal settlements to supplement our efforts. The CBEs help with the collection of garbage from the various zones to central locations .The Waste Management Unit has Skip bins in some of the zones where the Community Based Enterprises heap the waste to be collected by Lusaka City Council to Chunga, the official dumpsite but Lusaka City Council often has failed to collect."* (KII 7, Kanyama Ward 10 LCC)

4.5.2 NGOs Supporting

The findings of the study reveal that Kanyama has a number of NGOs funded to support CBEs in their operations. One of the many organizations is Care International Zambia. The NGO has worked closely with the community to uncover sustainable solid waste management systems. The NGO has equally helped the community set up water kiosks for the community to access clean water. On solid waste, Care proposed to do a pilot model for water waste tariff bundling

CBEs' have over time faced capacity issues with regard to proper transport to carry the garbage to the WMU skip bins. As a result, they dispose the garbage at the nearest unofficial dumpsite. Besides, the official refuse bins are rarely emptied and so are overflowing with garbage. The residents and the CBEs feel at liberty to throw the refuse anywhere.

The findings of the study from KIIs revealed that Water waste bundling was one of the proposed models which have been proposed to be piloted in the settlement funded by Care International Zambia. . This model proposes that waste fees paid through water fees and collected by water trusts and then to CBEs. The CBEs will then be supported financially and with equipment.

A CBE in an interview stated that;

"The TB is a very good thing for us CBEs because it will imply 100 percent revenue collection and will also allow the CBEs to have enough revenue to employ more workers and buy enough transport to collect the waste." (KII 3, Kanyama Ward 10 CBE)

From the group discussion, a participant stated that;

"Care did not come up with this model alone, the process started years back where we were called for several meetings to suggest how we can collectively solve the problem of waste, we settled for the proposed model and they wrote to funders and it was approved but it has taken too long for government to give a go ahead." (KII 6, Kanyama Ward 10 WT)

4.6 Challenges/Opportunities and Actions for Local Interventions

The study revealed that, in as much as the negatives of solid waste outweigh the positive, it does not go without saying that there exists so many opportunities that solid waste management bring. Employment creation for example as well as enriching the soil fertility by turning waste into compost. Though participants were not instructed to take any action or react to observable challenges and practices and behaviors during the process, some reported taking spontaneous decisions to educate people on community involvement in solid waste management and discourage their neighbors' from certain negative practices and having meaningful discussions on how to find solutions to common negative behaviors and practices. As described below, the young man from the group said he used the photo taking as an opportunity to advertise and encourage people to pay for waste collection services.

"*In my area, people are very difficult to convince in paying for waste, they openly practice open dumping because they claim to be very poor. When I was taking pictures, I encouraged them to start paying for waste to the CBE which am running and take responsibility of their own environments. "I went on to tell them that no political party will come and pay for you for waste, they will bring the soldiers once and then they will leave."* (FGD 3, Kanyama Ward 10 CBE)

During the transect walk, the participants noted a number of poor solid waste management practices that led to outbreak of diseases among residents as well as the community to become an environmental eye sore.

An example of such is the absence of a waste collector assigned to collect waste in Masauko market. Marketers have created an illegal dumpsite within the market and misuse any public space for dumping. Such practices of open dumping which have eventually contributed to transmission of diseases. In the focus group discussion, participants felt the need to get involved to put up interventions to this problem which ideally prompted them to draw up a plan of action. This was seen when they saw pictures of daily routines towards solid waste management. They said something has to be done to remedy the problem. Table 6 in the appendix, shows the proposed action plan by the community to encourage community participation in solid waste management.

CHAPTER FIVE: DISCUSSION OF FINDINGS

The complexity of solid waste in informal settlements is very evident. Participants in this study described in detail from the meandering transect walk and from the photographs they took in the community on various problems contributing to lack of community participation in solid waste management. This paper used the Precede proceed model for framing research objectives and questions. We discuss the findings with the aim to explore ways of optimizing community participation in solid waste management in Zambia's Kanyama peri urban area.

5.1 Social Factors Affecting Community Participation in Solid Waste Management

Looking at research objective number one which was, "*to investigate the social factors affecting community participation in solid waste in Kanyama.*"

Practices and altitudes towards solid waste management hinders how a community treats waste (Yasmin and Rahman, 2017). Some practices of littering of waste in drainages, burning, burying, littering in roads and just everywhere have seemingly over time been accepted and the results of doing so have been equally become a trend. Residents blame mandate holders for non-provision of waste collection services. One participant echoed how some residents continued to dump waste at night in open spaces and despite having experienced cholera in that area. Such practices/altitudes have also been found by Chilinga, 2013 who found that illegal waste management practices such as burning and burying have existed for a long time and contributes to environmental pollution and disease breakout. Waste management practices are of great concern because no one has really paid attention to the problem and its urgent need for attention. Over the years, low income communities have adopted open dumping as the most common way of disposing of waste (Medina, 2010). The consequences of such a practice breeds environmental hazards and affects the wellbeing and quality of life of the community (Palmer, 1998).

Because of such illegal practices, the community tends to shun proper waste disposal methods and conform to what is deemed easy. Tadesse (2004) found that a negative attitude towards waste management led to the creation of illegal community dumpsites which over the years become historical dumpsites. Such practices and attitudes have led to a realization of a greater need to do awareness and community educational programs on proper waste management.

Household knowledge on waste management is a significant factor in community participation leading to good understanding of the consequences of their actions and how it affects quality of life. Notably, residents had inconsistent knowledge about solid waste and its management. The inconsistency in knowledge level had an implication on the utilization of skip bins and collection centers provided to the community. **(**Olukanni 2013; Wasonga et al 2014), adds that inconsistencies in knowledge and perceptions in sanitation and hygiene makes a community not to give the primary attention it deserves to thereby compromising their lives. In this way, participants in the discussions felt that there is need to strengthen education on solid waste management with the intention of changing the behavior of individuals towards solid waste management.

According to Green and Kreutzer (1999), several collective factors affect hygiene behaviors as behavior is a multifaceted phenomenon. In this study, Knowledge, practices and altitudes of the community towards solid waste management acted as predisposing factors. The ability for a community to actively participate in solid waste management is closely linked to the existing practices in that particular community. The study observed that the residents had inconsistency in knowledge about solid waste management. The inconsistency in knowledge level had an implication on the utilization of community waste collection centers provided by existing community based Enterprises.

5.2 Environmental Conditions Affecting Community Participation in Solid Waste Management

In reference to research objective two, "*to analyze environmental factors affecting community participation in solid waste management,"*

In understanding environmental conditions affecting community participation, it is important to identify the behaviors in the target community and rate them. As population is growing, there is an increase in the demand for good solid waste services. Due to a rapid increase in urban population, there is a greater volume of waste generated. (Medina, 1997b) found that economic growth in addition to population increase and urbanization seriously strain municipal resources in order to deal with a booming amount of waste. Participants in this study felt that the community had grown and will keep on growing because of its close proximity to town, other amenities being provided in the settlement will even attract many more people in future. The settlement's position means that the demand to reach out to the entire community for waste services will be very high.

The UN habitat report published in 2003 indicated that if current trends of rural urban migration continues, the future need for waste collection in slums precisely will put additional pressure on the already struggling municipalities and evidently lack of resources by mandate holders to provide waste collection services will lead to indiscriminate dumping of waste. This kind of situation needs immediate attention to come up with a long lasting solution. And since the top down approach has failed the municipalities, exploring the bottom up approach can potentially bring a long lasting solution. Similarly, Onibokun (1999) added that the rapid increase in urban population converts to an increase in per capita solid waste generated. He noted that the limited resources allocated to deal with the problem will continue to allow people to dump waste indiscriminately.

5.3 Institutional and Organizational Opportunities for Solid Waste Management

In reference to research objective three, "*to explore institutional and organizational opportunities for community participation in solid waste management,"*

Traditionally, municipalities have been responsible for managing wastes generated by their residents. The most common waste management model involved, is the use of city vehicles to do the collection, transportation, and to take the garbage to its final disposal site (McAlister, 2015). Cities would also invest public funds to build and operate the final disposal sites. This system was financed by the city's general budget. Low-income areas, however, require a different approach, almost the opposite to the conventional solutions. Slums require decentralized solutions that actively involve the community in decision-making process, solutions that are low-tech and affordable, and that consider the contribution that informal refuse collectors and scavengers can make in solving the problem of municipal solid waste in the developing world (Medina, 2010).

Anschutz, 1996 added that financial and institutional resources by the municipality coupled with community participation plays a very important role in ensuring that the waste is collected and disposed at the final dump site. Any municipality ultimately depends on resources both financial and human resources to function to its full capacity. The municipality guild the implementation of solid waste management on the ground and in the city while financial and human resources remain a challenge. For quality of life to be improved in Kanyama, active participation between the community and the municipality has to be achieved.

The Public Private Partnership between the municipality and the community introduced, has however not solved the problem of indiscriminate waste disposal because the municipality is still struggling with capacity (Ahmed and Ali, 2004). Similarly, in the precede proceed model used in the study, it indicates that resources and circumstances prevailing in organizational situations could either hinder or facilitate the development of the health program. It is therefore important to assess the resources needed, the available resources and assess the factors influencing participation. This model linked to what a respondent reported indicating that the municipality once in a while receives funding from organizations for sanitation hygiene programs and only little amount are targeted towards waste management and mostly used to train CBEs.

5.4 Actions for Local Interventions

Referring to objective four, "*actions for locally appropriate interventions*". Participatory approaches enabled the participants to see the problem at a different angle and that they have the power to bring the change they want. In order to develop these locally appropriate interventions, the use of a meandering transect walk and photo voice ignited the participants to realize where the problem was coming from. (Bisung et al., 2014) In his study, photographs were displayed for detailed discussions. The discussions were centered on what they saw on the photographs. In this study, photographs were equally displayed and were used to remind participants about the current poor solid waste prevailing in the settlement. Photographs were visualized and reflected upon to understand the behaviors and daily practices. It was from these discussions that major problems were identified and listed. The study also noted that group discussions created a platform where participants expressed themselves freely and make positive contribution to promote behavior change. The whole process of wanting to change was as a result of some pictures which were shameful to look at and triggered some participant to realize there was need to take part in bring change.

This is also in agreement with a study done by (Wang, 2006) were she was looking at Chronic Pain in Older Adults. In her study she mentions that photo voice prompted discussions which included brainstorming by participants about what they felt could be solutions. In this study, the possible solutions were ranked in the order of priority after discussions. For example, photographs that depicted poor solid waste conditions and unhealthy practices were considered as serious problems that required immediate interventions. Thus the major problems assisted participants to plan for activities which would minimize the existing behaviors.

These planned activities were listed and the responsible persons were identified to take a lead in the implementation. The study noted that through this process, different stakeholders were identified to participate in the implementation of the planned activities and this created sense of ownership.

Similar study done by Hergenrather et al, 2009, revealed that equitable partnership between the researcher and community enhanced the identification of causes and solutions to community concerns from which action plans are developed and empowerment of participants to become advocates for change. This means that power sharing between the researcher and participants in identifying the root causes of the major unsanitary conditions and possible solutions and further development of interventions is very important in providing sustainable lasting solutions. Table 6 for the community developed action plan.

5.5 Strength of the Study

The study used three qualitative methods for data collection i.e. meandering transect walk, photo voice and 3 focus group discussion and a very engaging precede proceed model. These approaches were able to capture adequate data which was useful to find lasting solutions through development of workable action plans.

The participatory approaches used demonstrated that they can create empowerment through power sharing between researchers and the researched. As a matter of fact, the findings in this study were comparable to other studies done by other authors. This way credibility of the findings was achieved.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.1 Conclusion

Waste generation is increasing as the population is increasing in Kanyama. The Lusaka city council is responsible for waste transportation from the community to the final dumpsites but over the years they have faced challenges with accessing funds for effective solid waste management…Due to inadequate resources, waste remains uncollected in the community. The uncollected waste in the community creates illegal dumpsites which creates problems of flooding especially in the rain season. The open disposal and indiscriminate dumping is an eyesore. For solid waste management to be successful and effective, community participation is very vital, community input when planning programs addressing poor waste disposal in informal settlements is more than necessary. By so doing the community is empowered to suggest concrete solutions for some of the barriers identified. Knowledge can be a source of support to reduce illegal behaviors in children especially, gaps in knowledge about good waste management practices leads to poor waste handling and indiscriminate disposal of waste.

6.2 Recommendations

1. There is need to do sensitization in the community to ensure that the community do not create illegal dumpsite and also to ensure community buy in with regard to subscription to waste services.
2. The municipality should ensure that ordinary community members are involved in developing initiatives and solutions to solid waste related problem
3. The Municipality should consider bringing more CBEs on board to ensure that the entire community is fully serviced.
4. Municipal Council should establish means of educating the community for the purpose of increasing understanding about the importance of participating on solid waste collection, storage and disposal.
5. Kanyama is one of the most complicated informal settlements, it is not only a hot political battlefield for the two big political parties owing to the number of the inhabitants in the settlement, it also characterized by a complicated topography showcased by the rock outcrop that triggers seasonal flooding each rain season.

In the view of this uniqueness, the study recognized the need for the community to actually be mobilized into aggregates of thematic groups to tackle serious and fundamental challenges besieging the community. For the avoidance of doubt, this paper recommends that there is need to form, strengthen and consolidate self-help groups that should lead the Keep Kanyama campaign. In addition, there is no to form community watch groups that will monitor and deter illegal dumpers in the community. In essence the study clearly advocates that there is need for community led approaches in Kanyama as the only sustainable way of curing the solid waste challenge in Kanyama.

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APPENDICES

*Appendix 1: I*nformation Sheet

Title: COMMUNITY PARTICIPATORY ACTION RESEARCH TO EXPLORE COMMUNITY PARTICIPATION IN SOLID WASTE MANAGEMENT IN KANYAMA SETTLEMENT, LUSAKA.

INTRODUCTION

This serves to inform you that this study is conducted by Agness Shikabi, a masters of Public Health student in the department of Health Promotion at the University of Zambia.

PURPOSE OF THE RESEARCH

In this study I am investigating the use of community participatory action research to explore ways of improving community participation in solid waste management. The gathered information may help contribute to inform local authorities and solid waste community based organizations on the challenges and community based solutions in the management of solid waste. It is hoped that the findings of this study may also be used by stakeholders to address some of the inequities that exist among people living in peri urban settlements like Kanyama.

WHY YOU ARE BEING ASKED TO PARTICIPATE

I am asking you to participate in this study because of the experience you already have from this community and working with this community. The information you will give us can help in addressing solid waste management in the community.

PROCEDURES

If you agree to participate in this study, you will be asked to share your experiences of community participation in solid waste management in Kanyama. During the interview you will be asked a number of questions and will be required to openly discuss this. The interview will be recorded using an audio recorder.

RISKS/DISCOMFORTS

The proposed research poses Potential invasion of privacy to you as a participant as it is an inquiry into how you have participated as one of the community members in the aspect of solid waste management. The process of photo voice may involve invasive procedures of taking photographs of the environment and in some cases of individuals. However, if you may feel uncomfortable answering some of the questions. You may refuse to answer any questions that you do not want to answer or questions that make you feel uncomfortable. You may stop the interview session at any time.

BENEFITS

If you agree to participate in this study, there are no direct benefits to you but you will be contributing to generate information that will not only contribute to scientific knowledge but also contribute to solid waste service provision within the community.

CONFIDENTAILITY

Data collected from you will be kept strictly confidential and can only be shared with your permission and anything you say will be kept completely confidential during the interviews.The reports will be entirely blends so that no participant can be identified. Transcripts and recordings will be held in safety, and will be destroyed at the completion of the project. I would greatly appreciate your honest response during the interview.

PARTICIPATION

Your participation in this study is voluntary. You do not have to answer any question you do not want to answer. You can choose to end participation in the study any time you want and skip questions without penalty. You have the right to clarification on any question you do not understand

For Ethical Queries please contact	For any queries please contact
The Secretary, Ethics Committee Telephone: +260-1-256067 Telefax: UNZALU ZA 44370 Fax: +260-1-250753 Email: unzarec@zamtel.zm	Agness Shikabi C/o University of Zambia, Department of Health Promotion, P.O Box 50110, Lusaka. Cell: +260 977167658 Email:agnessshikabi@gmail.com

However if you would like to contact an independent party please contact my supervisor: on Cell: +260971194852 or Email: mweemba2@yahoo.com.

Appendix 2: **Translated INFORMED CONSENT FOR KEY INFORMANT INTERVIEWS**

Chivomelezo cho kambitsana ndi anthu oenerera

Conde inu mukasaina siginecha(Kapena Kufwatika) papepala iyi chitanthauza kuti:

- **Mwandiwitsidwa za kafukufuku cholinga, ndondomeko, zabwino zace ndinso zobvuta,**
- **Mwapatsidwa mpata wofunsa mafunso mukalibe kusaina**
- **Mwavomera kutengako mbali ku kafukufuku popanda kukangamidzidwa. Ngati Otengako mbali mumaphunziro aya alindiufulu o lumphila mafunso, kapena kulekeza panjila manfunso pantawi iliyonse popanda chilango chilichonse**

Dzina…….

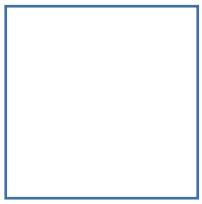
Saini ……..

Kufwatika 

Tsiku:……

Ochitira umboni ngati inu mwa fwatika Dzina

saini:…….

Kufwatika 

Tsiku:……

Appendix 3: **Translated INFORMED CONSENT FOR TRAINING PARTICIPANTS**

Chivomelezo cho Otengako mblai kumaphunziro ya zojambula zazinkope ndi mau

Conde inu mukasaina siginecha(Kapena Kufwatika) papepala iyi chitanthauza kuti:

- **Mwandiwitsidwa za kafukufuku cholinga, ndondomeko, zabwino zace ndinso zobvuta,**
- **Mwapatsidwa mpata wofunsa mafunso mukalibe kusaina**
- **Mwavomera kutengako mbali ku kafukufuku popanda kukangamidzidwa.**

Ngati Otengako mbali mumaphunziro aya alindiufulu o lumphila mafunso, kapena kulekeza panjila manfunso pantawi iliyonse popanda chilango chilichonse

Dzina…….

Saini ……..

Kufwatika

Tsiku:……

Ochitira umboni ngati inu mwa fwatika Dzina

saini:…….

Kufwatika

Tsiku:……

Appendix 4: INFORMED CONSENT FOR FGD PARTICIPANTS

Chivomelezo cho Kambitsana pagulu ndi anthu()

Conde inu mukasaina siginecha(Kapena Kufwatika) papepala iyi chitanthauza kuti:

- **Mwandiwitsidwa za kafukufuku cholinga, ndondomeko, zabwino zace ndinso zobvuta,**
- **Mwapatsidwa mpata wofunsa mafunso mukalibe kusaina**
- **Mwavomera kutengako mbali ku kafukufuku popanda kukangamidzidwa.**

Ngati Otengako mbali mumaphunziro aya alindiufulu o lumphila mafunso, kapena kulekeza panjila manfunso pantawi iliyonse popanda chilango chilichonse

Dzina…….

Saini ……..

kufwatika  **Tsiku:……**

Ochitira umboni ngati inu mwa fwatika Dzina

saini:…….

kufwatika 

Tsiku:…….

Appendix 5: Photo Release Consent Form for Participants

Study Title

Community participatory action research to explore community participation solid waste management in kanyama, Lusaka.

I,…….,give my consent to be photographed and/or recorded during the study on community participatory action research to explore community participation in solid waste management in Kanyama.

By signing this form, I also grant permission to the researcher to use the photographs and/or Video recordings for education and/or publicity purposes in perpetuity. By signing this form, I hereby give the researcher all rights to materials made or collected relating to me in perpetuity, I release them from any and all claims arising out of, or resulting from, my appearance and/or statements and I waive all rights of copy right or ownership in or to the resulting education/information materials, photos and recording which relate to me.

Therefore, your signature (or thumb print) on this document is an indication that:

1. **You have been informed of the purpose of the study.**
2. **You are taking part in this study voluntarily.**

_____ _____ _____

Name of Participant **Signature of Participant** **Date**

Print thumb

Witness (in case of thumb print) _____ sign_____ date _____

Appendix 6: Key Information Interview Guides

Key Informant Interview using semi structured interview Guide for Waste Management Association

QUESTIONNAIRE FOR KEY INFORMANT INTERVIEWS

1. What is the role of the WMA in solid waste management?
2. How does WMA make communities participate in solid waste management?
3. What engagement strategies does WMA use to encourage community participation?
4. What Strategies does WMA use to encourage participation in solid waste management
5. What platforms has WMA used to encourage community participation in solid waste management?
6. How does WMA do the awareness/Engagement in solid waste-both subscription and participation
7. How successful has WMA been in encouraging people to participate in SWM
8. What challenges does WMA face in terms of solid waste management
9. What opportunities then exist in WMA for effective solid waste management?

Key Informant Interview Guide for Community Based Organization

SEMI STRUCTURED QUESTIONNAIRE FOR KEY INFORMANT INTERVIEWS

1. What is the role of a CBE in solid waste management?
2. How do CBEs make communities participate in solid waste management
3. What Strategies do CBEs use to encourage household participation in solid waste management?
4. How do CBEs do the awareness/Engagement in solid waste-both subscription and participation
5. What Channels of participation does CBEs use to engage communities in Solid Waste Management
6. How successful have CBEs been in encouraging people to participate in SWM
7. What challenges do CBEs face in terms of solid waste management
8. What opportunities then exist within your CBE for effective participation in Solid Waste Management

Key Informant Interview Guide for LCC

QUESTIONNAIRE FOR KEY INFORMANT INTERVIEWS

1. What is the role of LCC in solid waste management? (institutional capacity)
2. What is the mandate of LCC over solid waste management in the city?
3. How does LCC make communities participate in solid waste management
4. What Strategies do LCC use to encourage participation in solid waste management
5. How does LCC do the awareness/Engagement in solid waste-both subscription and participation
6. How is the Funding structure of LCC towards solid waste management?
7. What Channels of participation does LCC use to engage communities in Solid Waste Management
8. How successful has LCC been in encouraging people to participate in SWM
9. What challenges does LCC face in terms of solid waste management
10. What opportunities then exist in LCC for effective SWM

Key Informant Interview using semi structured interview Guide for Ward Development Committee

QUESTIONNAIRE FOR KEY INFORMANT INTERVIEWS

1. What is the role of the WDC in solid waste management?
2. How does WDC make communities participate in solid waste management?
3. What engagement strategies does WDC use to encourage community participation?
4. What Strategies does WDC use to encourage participation in solid waste management
5. What platforms has WDC use to encourage community participation in solid waste management?
6. How does WDC do the awareness/Engagement in solid waste-both subscription and participation
7. How successful has WDC been in encouraging people to participate in Solid waste management
8. What challenges does WDC face in terms of solid waste management in Kanyama?
9. What opportunities then exist in WDC for effective solid waste management?

Key Informant Interview Guide for the NGO

SEMI STRUCTURED QUESTIONNAIRE FOR KEY INFORMANT INTERVIEWS

1. What is the role of the NGO in solid waste management?
2. How does the NGO make communities participate in solid waste management
3. What Strategies does the NGO use to encourage household participation in solid waste management?
4. How does the NGO do the awareness/Engagement in solid waste-both subscription and participation
5. What Channels of participation does the NGO use to engage communities in Solid Waste Management
6. How successful has the NGO been in encouraging people to participate in Solid waste management
7. How is the Funding structure of NGO towards solid waste management?
8. What challenges does the NGO face in terms of solid waste management
9. What opportunities then exist within your NGO for effective participation in Solid Waste Management.

Appendix 7: Support Letters

APPROVAL LETTER FROM THE AREA COUNCILOR KANYAMA SETTLEMENT

Dear Members of the committee,

On behalf of the Office of the Area Councilor of Kanyama Settlement, I am writing to formally indicate our awareness of the research proposed by Ms. Agness Shikabi, a student at the University of Zambia, School of Public Health. We are aware that Ms. Agness Shikabi intends to conduct her research study by using community participatory action research to explore community participation in solid waste management in Kanyama.

We therefore have no objection for her to undertake the research as the findings will help us in decision making with regard to solid waste management in our settlement and in Lusaka as a city.

If you have any questions or concerns, please feel free to contact the office of the area councilor, Kanyama Settlement.

Sincerely,

BILUMBA BRIGHTON

LUSAKA CITY COUNCIL
OFFICE OF THE COUNCILOR
06 JUN 2017
KANYAMA WARD10
P.O. BOX 30077, LUSAKA-ZAMBIA

LUSAKA CITY COUNCIL
OFFICE OF THE COUNCILOR
06 JUN 2017
KANYAMA WARD10
P.O. BOX 30077, LUSAKA-ZAMBIA

PHOTO RELEASE CONSENT FORM FOR THE AREA COUNCILOR

In conjunction with my position as the Area Councilor of Kanyama I..... CLLR. BILUMBA BRIGHTON consent to the release and use of Photo that will be taken in Kanyama for the study on community participatory action research to explore community participation in solid waste management in Kanyama. I understand the study will use the photographs and/or Videos to come up with community solutions with regard to proper management on solid waste management and can be released in documents for which I understand. I consent to review, eveluate other use of the photographs and/or videos that will be taken in the study.

This consent is given in satisfaction and intended to constitute written consent as required by the study.

Signed.....

Date 06/06/2017

Position KANYAMA WARD AREA COUNCILLOR

TABLE 4: PHOTOVOICE (SHOWeD) CODING FRAMEWORK

FGDs	FGD1 (Women)	FGD2 (Men)	FGD3 (Mixed)
S	• Indiscriminate dumping of waste in roads, drainages and ditches • Central collection centers creating problems. • Waste collection containers with waste overflowing. • Stagnant water sipping in nearby shallow wells, the water is mixed with rotten garbage, near roads and wall fences • We see a skip bin and a person loading into an overflowing bin. • Lack of willingness to pay for waste	• We can see cleared waste after the Zambia army came in the community during cholera. • There is an illegal dumpsite created by the non-subscribers. • Those are Houses built in an improper manner makes it difficult for CBEs to have a wide waste collection coverage due to impassable roads.	• We can see stagnant water, a seware line, garbage dumped indiscriminately near a borehole and a toilet in a market. • Undisinfected garbage lying in water. Dogs are also thrown here. • We can see solid waste heaped at collection centers • Plastics mixed with stones, trees, flowers and carbon papers. They are all in one bag and not separated
H	• Passerby's, households, freelance collectors, find it easy to come and dump their waste here. Dogs and even dead bodies can decompose in that drainage • There are so many disadvantages because	• The place looks well Cleaned by contracted people from the g.v.t because of cholera • Unwilling households dumping	• The place has become a breeding place for different bacteria and there is underground water pollution. • Sometimes children play in the waste and get sick.

	people dump there in skip bins at night. The LCC due to lack of capacity don't come in time to collect the bins on time, thus garbage will be spread everywhere. There will be no control and an illegal dump site will be the result.	waste indiscriminately. Kanyama is rocky place, No proper drainages, impassible roads when it rains too much floods and ditches when its flooded people litter anyhow because there is no vehicle that passes to collect from certain households because of too much floods and water and ditches. The housing arrangement even makes it worse to have good road system.	The system of heaping solid waste at collection centers is not good it promotes illegal dumping.

O	- It relates to us because we are the ones who suffer from cholera at the end. - Majority of the people in this community are not much aware that garbage contributes to diseases and	- Practices- the community has practiced illegal waste disposal methods for years and they are used.	- The existing solid waste systems have hiccups making it difficult for the CBEs to have a wider service coverage thus leaving a lot of households
	the people being poor makes them not able to pay. Many people are very poor as many people are not in employment. Even the houses they live in are very small especially if you go inside the community.	- People priotize water over waste collection. They would rather pay for water than clear their waste.	Unserviced which later leads to illegal dumpsites.

W	• Because of the Unwillingness by households to pay for waste to registered CBEs • There is no community ownership to solid waste related matters it's for the	• Bad attitude towards waste e.g people got upset over burying waste but they got used to the system and as such they could get used if another system was introduced. • Most people are poor which makes it difficult for them to pay for waste collection services. Ignorance by some residents has greatly contributed to the current solid waste state in Kanyama.	• Non-subscribers always dump waste at night near waste containers in fear of being caught dumping. Last time a dead body was found by a Cbe that went to clear the waste container, small dead babies have been found hidden in garbage as well. Lack of political will some political parties have given their cadres open spaces to start operating as community dumpsites. • Households prefer to pay these illegal self-made dumpsites than to CBEs.

			• Because of the rocky nature of Kanyama has made it very difficult for people to avoid certain activities like stone quarrying which creates ditches in most parts of the community where potentially there was a road.
D	A work plan was jointly developed.		

TABLE 5: Major and subthemes

S/N	MAJOR THEME	Sub-Theme	Code
1.	Associated Social Situation	Settings	• Practices/Altitude and Behavior • Household willingness to subscribe for waste services/Capacity to pay for Waste Services • Household knowledge on waste • Beliefs/community perception on solid waste management • Penalties for Illegal dumpers • Amount of money they are willing to pay • Responsibility of waste disposal • Existing alternatives for SWM
2.	Environmental Conditions	Adverse Conditions	• Community created illegal Disposal Sites • Impassible Roads/Drainage system • Housing Arrangement (settlement) • Population Growth
3.	Institutional and organizational Opportunities	Immediate Actions or Stakeholder networking	• Waste water bundling • Availability of Funding SWS • NGOs support

Source: Researcher Data, 2018

TABLE 6: Proposed Action plan for Kanyama Settlement, 2018

No.	Challenges	Action	Who (s) to take lead	Time Frame
1	Uncollected waste/ Littering of waste/ illegal dumping of waste	Strengthen community watch dogs	WDC	On-going
		Stiffening penalties for illegal dumping	LCC	On-going
		Increase sensitization	CBEs	On-going
2	Accumulated waste due to waste collection centers.	Phasing out of collection centers/Garbage to be put in sacks and be taken directly to the dumpsite.	LCC,CBE,WDC	2018
3	Unwillingness by community members to subscribe to solid waste collection services.	Increase community sensitization	WDC,CBE	ongoing
		CBEs to provide quality service.	WDC	ongoing
		CBEs to Charge reasonable fee for waste collection services to increase community participation	CBEs	2018
		Engage in certain community promotion activities to change attitude in solid waste management.	Community Leaders, CBEs, WDC	On-going

		Define roles for community leaders, WDC, Civic leaders, etc	LCC	2018
		Engage local leaders to support the intervention/ improvement works in SWM	WDC	On-going
		Stiffening penalties for illegal dumping	LCC	Ongoing
4	Inadequate knowledge with regard to solid waste management and its implications	Increase sensitization	WDC	Ongoing
		Conduct education programmes and Use of drama	CBEs, WDC	Ongoing
5	Accumulated waste due to inadequate transport to take to dump site	Allocate transport equipment	LCC WMU	
6	Inadequate development due to unwillingness by community members to participate	Increase sensitization	WDC	
		Leaders of the community should be committed to duty by fulfilling the promises to the people	WDC	
		Engage in certain promotion activities to change attitude	Community Leaders	

		Engage local leaders to support the intervention/ improvement works	WDC	