

**CHALLENGES OF SOLID WASTE MANAGEMENT A CASE STUDY OF  
WABIGALO PARISH, MAKINDYE DIVISION  
KAMPALA DISTRICT**

**BY**

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## DECLARATION

I **Nakanwagi Aisha Matovu** here by declare that the work in this research proposal is to the best of my knowledge, original unless otherwise acknowledged and that it has never been presented before in any institute for any academic award for publication.

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## APPROVAL

I certify that this research report was submitted under my supervision as the University supervisor.

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Signature : \_\_\_\_\_

Date : \_\_\_\_\_

## DEDICATION

I dedicate this work to my parents Mr. and Mrs. Matovu and the family, not forgetting my friends Phionah and Sharifah may the Lord reward you in accordance.

## **ACKNOWLEDGMENT**

I extend my acknowledgment to the staff and administration of the faculty of social sciences, for the support and effort rendered to me during this course of the study.

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## LIST OF ACRONYMS

MSWM	Municipal Solid Waste Management.
MSW	Municipal Solid Waste
SW	Solid Waste
KCC	Kampala City Council
MOH	Ministry Of Health
EPA	Environmental Protection Agency
WE	World Bank
US	United States
WHO	World Health Organization
CBO	Community Based Organization
CSO	Civil Service Organization
PHD	Public Health Department
NEMA	National Environment Management Authority
LA	Local Authority

## ABSTRACT

The study carried out an assessment to establish challenges of solid waste management in Makindye Division, Wabigalo Parish and to specifically assess community knowledge on Solid Waste Management, determine the obtaining attitudes and find out or establish community practices in regard to solid waste management. A cross-sectional study was undertaken in the Wabigalo parish where a sample size of a hundred respondents participated in the undertaking. Data was collected using mainly the quantitative data instruments mostly structured questionnaires were administered. The study established that the community of Wabigalo Parish is knowledgeable about good solid waste management methods. However it was established that regardless of the awareness, they had a poor attitude towards putting in to practice the knowledge due to lack or inadequate collection and storage facilities like public skips or gazetted central collection sites and long distances to the available skips.

Half of the residents acknowledged taking their solid waste to the available public disposals. Residents perceive Kampala City Council is responsible for [disposing off the refuse. The community is knowledgeable about good solid waste management. There is poor attitude towards proper Solid Waste Management among the residents. Public facilities for Solid Waste Management are inadequate and the communities feel its Kampala City Council responsibility to dump the waste in their area.

Recommendations arrived at entail Kampala District assisting Makindye Division to promote private and community based associations in the participation of Solid Waste Management KCC Makindye authority to offer support supervision to identified private and CBOs, mobilize and sensitize residents on proper and their participation in proper solid waste management. By –laws to be passed that enforce sorting of Solid Waste for recycling and reducing on its volume hence reduction in disposal costs. The Local Authority and Private Associations to lobby for more funding within and without any hindering blocks.

## **CHAPTER ONE**

### **Introduction**

#### **1.0 Introduction**

Globally, management of solid waste constitutes one of the most serious environmental and health challenges facing local and national governments in developing countries.

Solid waste may be defined as materials from households, commercial, industrial and agricultural activities including medical/hospital wastes that have lost value to the first owner.

Solid Waste Management includes waste generation, storage, collection, transportation and its final disposal.

Several factors influence the quantities and qualities of waste generated in an area that is population, economic and social activities of the inhabitants including geographical location, industrial growth and the standard of the people living in an area.

The increasing urbanization rising standards of living and rapid social and economic development associated with population growth has resulted in to increased solid waste generation by domestic, industrial, trading and commercial activities.

Therefore, proper Municipal Solid Waste Management is a very essential component of the environment, health and development that are very important in regard to the improvement in the wellbeing and living standards in any community.

Unfortunately, the increase in Solid Waste generation in most if not all- urban settings has not been accompanied by an equivalent increase in the capacity of the relevant urban authorities to deal with this challenge.

The East African newspaper June 1995 noted that Nairobi City Council generated 8,000 tones of Solid Waste daily yet there was inadequate equipment fro its collection and transportation and that to a greater extent attitude of most residents is that Solid Wāste Management is the sole responsibility of the city council.

However, though it's the responsibility of the various local urban authorities in their various areas of jurisdiction to manage generated Solid Waste within their area, (Public Health Act 1964), there has been a shift in the recent years towards involvement of the private service providers and the community in Solid Waste Management at all levels in order to increase the efficiency and effectiveness of this social service (KCC 2000).

Ngategize (2000) estimated that Kampala City Council spent US \$ 1.53 million per month yet could only dispose off 30% of the generated SW, showing that Solid Waste Management is still inadequately provided for.

Poor Solid Waste Management is a danger to both environment and human health (Javera 1993), notably indiscriminate disposal of Solid Waste pauses a danger of polluting water sources, encouraging breeding of disease vectors which has led to out breaks of poor environmental health related diseases like Cholera, malaria diarrhea etc.

## **1.1 Background**

Solid waste refers to organic and inorganic waste materials produced by households, commercial, institutional and industrial activities that have lost value in the sight of the initial user (Frinjins and Haneler, 1998). Hobson (1996) had earlier classified domestic Solid Waste in categories of fine matter (dust and ashes)cinder remains of burnt charcoal, paper, cardboards, vegetable and other biodegradable matter, textile and rugs, glass, broken bottles, plastics and unclassified debris like wood, leather and stones.

This is a very close if not similar composition of Solid Waste generated in Wabigalo Parish Makindye Kampala City Council. This Solid Waste poses environment health risks. It needs therefore needs to be properly managed.

However, proper Solid Waste Management is still lacking. It's against this background that this study was done focusing on the Solid Waste challenges namely; community knowledge on Solid Waste, attitude and practices in order to establish practical strategies to combat these challenges faced in Solid Waste Management.

## **1.2 Statement of the Problem**

Solid waste management remains a problem in developing countries and the world over due to the ever-increasing populations in urban centers as people move from rural areas to towns in search of employment and good living conditions.

Solid waste management constitutes one of the most serious and expensive problems in African cities and towns. In Kampala City particularly Makindye Division, there are inadequate facilities for the storage (skips) and disposal (trucks) of solid waste. As a result, indiscriminate dumping of solid waste is in practice, refuse is found littered on to streets, drainage channels, onto roads and roadsides. And where skips are availed, they are observed overflowing with the accompanying nuisances of flies and offensive smells all of which are a danger to public health and the environment at large.

This scenario is due to interrelated factors amongst which is the rural- urban migration, increased commercial and industrial activities including the eating habits of the residents. Also as a result, this has led to an unhealthy environment, blocked drainage facilitating the breeding of mosquitoes hence a high prevalence of malaria in the Division. There fore, unless the challenges of solid waste management are addressed, the spread of diseases related to poor environment conditions will continue to abound in Makindye Division.

### **1.3 Purpose of the study**

To find away forward on how to put an end on the challenges facing the people of Wabigalo parish on solid waste management.

#### **1.3.2 Specific objectives**

- i) To assess community knowledge and attitude of solid waste management.
- ii) To find out the community practices in solid waste management
- iii) To find out what challenges are faced by the Wabigalo community in relation to good solid waste management.

### **1.4 Research Questions**

The study was guided by the following questions.

- i) What knowledge and attitude the residents have on good solid waste management?
- ii) What challenges are faced by the Wabigalo community in relation to good solid waste management?
- iii) What practices on solid waste management are in place amongst the residents of Wabigalo Parish?

### **1.6 Scope of the study**

#### **Geographical scope**

The study exercise was carried out in Wabigalo parish, Makindye Division, Central Uganda. It will cover local council ones where the actual poor solid waste management obtains.

## **Content Scope**

The exercise/study limited itself to those aspects of solid waste management that bring out the knowledge, attitude and practices of the residents.

## **Time Scope**

The study lasted for a period of one month and will be basically focused on the knowledge and attitudes of the residents of Wabigalo Parish, Makindye Division.

## **1.7 Significance of the study**

Nuwagaba et al (1995) observed that over 40% of households in Kampala dispose off garbage in open spaces and that 35% in drainage channels, and a continuous sea of litter on Kampala streets. An indication that the attitude and practices of the residents are really wanting.

Because of this poor waste management, there is environmental degradation, prevalence of communicable diseases. There is therefore a need to know the challenges bringing about poor solid waste management focusing the knowledge, attitude and practices of residents.

This study will also avail a baseline for the Makindye Division and decision makers when handling matters concerning solid waste management.



## 1.8 Operational Definition

**Household:** A group of persons who normally eat and drink together, that is Man, a Woman/wife and their children and sometimes relatives and visitors.

**Urban:** Relating to or in the city

**Solid Waste Management:** The process of waste generation, storage collection, transportation and final disposal.

**Solid disposal:** Means the discharge, depositor dumping of solid waste on to land in water.

**Solid waste:** Organic and inorganic waste material from households, commercial Institutional and industrial activities that have lost value to the first owner.

**Refuse:** Biodegradable and non-biodegradable materials discarded/rejected by original use.

**Slum:** Crowded city suburbs with poor sanitary conditions.  
**Local Authority:** Local councils (I, II, III, IV, and V) in the area of study (Kampala City Council/Makindye Division.).

**Garbage:** Waste matter as a result of food preparation, serving or storage.

**Challenges:** Difficult tasks faced in the process of solid waste management.

**Community:** A group of users of services who live in the same area and have access to and use the same services.

**Sanitation:** Personal, household and environment cleanliness.

## CHAPTER TWO

### LITERATURE REVIEW

#### 2.0 Introduction

This chapter basically dealt with all the various literature reviewed in relation to solid waste, solid waste management and the challenges of solid waste management.

#### 2.1 Knowledge and attitudes of solid waste management

Solid waste refers to organic and inorganic waste materials produced by households, commercial, institutional and industrial activities that have lost value in the sight of the initial user (Frinjins and Haneler, 1998). It can be classified basing on its source for example hospitals, commercial places, industrial settings, domestic areas and agricultural fields. It may also be classified according to whether it's hazardous in nature or non- hazardous (Hobson and Sen, 1979).

Hobson (1996) had earlier classified domestic Solid Waste in categories of fine matter (mostly dust and ashes) cinder remains of burnt charcoal, coal, paper, cardboards, vegetable and other biodegradable matter, textile and rugs, glass, broken bottles, plastics and unclassified debris like wood, leather, stones and crockery.

Municipal Solid Waste includes all non-hazardous Solid Waste generated from domestic, commercial, institutional and light industrial activity areas but excludes waste from heavy industries, sludge and waste from agricultural fields (EPA, 1993).

Generation of Solid Waste in urban areas is estimated at 0.9kg per capital per day (KCC Makindye Division, 2002). And a survey carried out by ERL (1990) revealed the composition of Solid Waste in Kampala as: vegetable matter (73.8%), street debris (5.5%), tree cuttings (8%), paper (5.4%), metal (3.1%), saw dust (1.7%), plastic (1.6%), glass (0.9%). (Source: Environmental Resource Limited). The increasing amount of solid waste causes serious environmental problems in urban areas of developing cities.

Javera (1993) urges that urban solid wastes are injurious to human health and the environment. The urban poor especially those in slums and wetlands are most affected because they live close to waste dumps and lack safe water and basic sanitation, hence they rely on open water for basic sanitation. They also rely on open channels and holes in the ground as illegal means of disposal. Consequently there's a high incidence of sanitation related disease among the urban poor because they are exposed to epidemics like cholera and typhoid.

The type and amount of solid waste generated varies from city to another. In tropical cities, the production of solid waste is higher than in the temperate cities and therefore Tropical cities are more prone to the danger of poor Solid Waste Management than Temperate cities (Cairn cross and Feachem, 1993).

Europe and North America, which are among the temperate urban areas of the world, have a solid waste generation rate of 0.2kg per person per day as compared to tropical urban areas whose generation rate is between 0.3kg and 1kg per person per day.

## **2.2 Community practices aimed at solid waste management**

Solid waste management involves generation, storage, collection, transportation and disposal methods, urban authorities have the responsibility of ensuring safe reliable and cost effective removal and disposal of solid waste, which takes up a large proportion of their resources. The material and financial resources are not adequate to solve the problem. (Ngategize, et al 2000).

And that the need for a sufficient and sustainable Solid Waste Management system to meet the Solid Waste Management challenges has led to increased involvement of the private sector, which is seen as a key participant in Municipal Solid Waste management.

Proper disposal of Solid Waste Management is very important in Municipal Solid Waste Management, there are several methods of managing solid waste, and these include crude dumping, composting, incineration and use of sanitary landfills. Factors like type and quantity, economic status and environment do affect the disposal failing to be used.

In Kampala City, disposal is by land filling at Kiteezi landfill in Wakiso District (KCC, 2002)

Sorting Solid Waste by type and poor storage of refuse at household level has been pointed out as a major factor contributing to poor solid waste management. (NEMA, 2002).

Several storage facilities can be used depending on the living standards, environment conditions and the economic status of the community. These facilities include metal dustbins, plastic sacks, refuse bags or containers and litter bins (Hobson, 1969).

Kingslay and Mikhail (1991) noted that domestic waste management is a growing problem to the population of developing countries. The world development report (1992) further indicates that the municipal Solid Waste services are often inadequate between 1/5 and 1/2 of the municipal budget but yet most of the waste is not removed even when the budget is adequate for collection and safe disposal of the waste remain a big problem.

Inadequate collection and un-managed disposal of waste affects human health and economic productivity, the report observes. Yhdego (1994) also describes the problem of Solid Waste Management as having been mismanaged for so long especially in African Cities like Nairobi, Dar-es-salaam, Lagos and Accra

where it's estimated that only 20-30% of solid waste generated is disposed off safely.

Solid waste management problems also manifest in East Africa towns. The East African News paper (June 1995), noted that Nairobi City alone generates 8,000 tones of waste daily, most of it uncollected. Attempts at privatizing collection have done little to alleviate the overall problem of uncollected refuse both in suburbs and in the central business district.

The Nairobi City Council blames the situation on lack of adequate equipment but experts have pointed out that it has also a great deal to do with attitude in that most residents perceive waste management as solely a responsibility of the city council.

Solid Waste Management is a growing global problem in cities than in towns. Tropical cities produce much more refuse than temperate cities, Cairncross S. et al (1993). He continued to explain that refuse collection service is a complex business, if possible, the used in the management should but used at pilot scale before extension to cover the whole city.

Hardoy Jorge (1990) attributes the problem of poor Solid Waste collection to inadequacies in solid waste facilities like vehicles.

During the earth summit held in Rio de Janeiro Brazil, 1992, issues of Municipal Solid Waste management featured prominently, among these, were environment degradation and destruction through unsound solid waste management practices.

It was also noted that careless disposal of waste may ultimately pose a risk to human health and the environment. It was further recognized that municipal authorities in developing countries were increasingly getting constraints to provide solid waste management services due to financial technical and institutional constraints among others. (Ministry Of Health news letter 2002). Solid waste management is a public good that Local Government as metropolitan

governments are typically responsible but their own staff, machinery and monies. The private sector namely community groups, Non Governmental Organizations and co-operatives must be involved (World Bank 1998). In the United States of America, private firms collect more than 80% of solid waste. In Seoul-Korea, 35% of the solid waste is collected by private firms (counter 1989).

The 1999 solid waste ordinance of Kampala City Council empowers the private sector to participate in the provision of solid waste management services Kampala City (KCC Report 2002). In Uganda by the year 2006 more than 50 private organizations had got involved in solid waste management in their localities through still constrained heavily (NEMA, 1998).

### **2.3 Challenges of Solid Waste Management**

Challenges of waste collection, transportation and insufficient waste disposal are main concerns. Unemployment remains number one urban problem, according to the mayors of cities around the world, the second most serious problem faced by city dwellers is insufficient Solid Waste disposal, the survey of 151 mayors revealed the issue replaced inadequate housing as the number two problem in 1994, now ranked number four.

Among other significant results are that 44% of mayors who listed insufficient solid waste collection as a severe problem, also listed inadequate waste facilities as severe (Cornell waste management Web site).

The new vision paper 2000, noted that Kampala City solid waste disposal at Kitezi, Mpigi District had come under attack exposing 1000 people to toxic waste and endangering aquatic life in the neighboring wetlands. It noted that since 1992, more than 300 tones of unsorted wastes had been dumped in the area daily.

The garbage dumped in Kitezi includes medical waste, plastics and rotten fish. It was also reported by the residents that their free range animals especially

cattle, pigs and chicken had died from poison oozing from the rubbish with sulphides into water which is too high for consumption. They also noted that from morning to sunset, huge trucks carrying garbage roam in the area. This implies that waste management is indeed a challenge.

O'Leary (et al 1988), observes that due to increasing distance between the sites of generation and disposal, the cost of transporting wastes has become higher, hence much of the waste are not disposed off safely due to transport funds and even equipments like trucks.

A lot of resources including capital have invested in Solid Waste Management in Kampala and else where. According to the World Bank (1986), 20% and 50% of the Municipalities is spent on Municipal Solid Waste Management and even at the highest expenditure, the level of waste management services are low and only 50-70% of the solid waste is collected.

The peri-urban residents are most affected because of their tendency to dispose off waste indiscriminately causing subsequent blockage and flooding of water channels and especially in rainy seasons there is always emergency of poor sanitation related disease like Cholera and malaria (Nuwagaba and Mwesigwa, 1995).

He also observed that in Kampala 40% of the households dispose off solid waste in open spaces and that 35% in drainage channels and only 25% dispose off refuse in refuse collection bins/skips.

Poor Solid Waste Management has several health hazards like environmental degradation and diseases on both the biodiversity in the environment and humans. (M.O.H Epidemiological Newsletter 2002).

In Tanzania, Yhdego (1994) reported that poor sanitation and improper waste disposal practices result in spread of infectious diseases, which are the most frequent causes of morbidity and mortality.

Uganda as one of the developing countries faces problems related to municipal solid waste management. It's necessary to note that research about waste management has only been conducted in Kampala. The East African (June 1995) noted that up to two tones of solid waste is generated in Kampala City daily by approximately 800,000 people.

However, Kampala City Council has a capacity to collect only 1/5 of this refuse is left out to the open as the city has only a handful of private solid waste collectors who mostly use pick-ups and are concentrated in sparsely populated well-to-do suburbs of the city.

In Addis Ababa, Ethiopia it was found out that less than 40% of the waste generated was being collected. This lack of coverage was attributed to rapid unplanned growth of the city and severe resource limitation. The same study also found the existing disposal site being an environmental hazard which should have to be replaced (Arnold, 1995).

The increasing distance between the site of generation and disposal, the cost of transporting waste has become higher. This is imposing a burden on urban authorities who are unable to afford clean disposal methods. (Arnold, 1995).

The devastation of lives and property which occurred due to the 1982 floods in Ibadan-Lagos, Port Harcourt and Abaya in Nigeria were attributed to accumulation of refuse that blocked the drainage channels in these cities.

A study carried out in Accra Ghana showed that only 11% of the 1.4 million residents benefit from the waste. Collection services offered by the local authority, while the remaining 89% disposed off their waste in community dumps, open spaces, in waste bodies and storm water drains. (<http://www.c.f.ecornell.edu/wm>)



## **2.4 Way forward to challenges facing solid waste management**

The discussions in the preceding sections indicate that there are various constraints faced by both the recipient and donor countries in developing and implementing sustainable solid waste management systems. There is no simple measure to remove or loosen any of these challenges. Some challenges are harder to remove than others. A multitude of measures are usually required to produce a successful outcome of a collaborative project. A mix of some of the following measures or approaches may lead to a successful outcome. (Denis McLucas, 2001)

### **Packaging External support**

A number of external support agencies recognize solid waste management as a priority issue in developing countries and are interested in supporting to improve the situation.

However, their approaches to solving solid waste management problems in developing countries have been piecemeal and not well coordinated. Also, their support has been provided mostly on a short-term basis. These characteristics of external support are inherent, in the organizational mandates and operational modes of the external support agency, and therefore they cannot be easily changed. (Yhdego Michael, 1994),

### **Defining Clear Roles of Relevant Agencies in Developing Countries**

Better coordination for effective implementation of a solid waste management collaborative project is also required by the various agencies involved in solid waste management in the recipient country. However, as mentioned earlier, many solid waste management projects in developing countries suffer from the lack of coordination among the relevant agencies, which often results from the lack of clear roles defined for these agencies in solid waste management. To ensure effective institutional support for a collaborative project for solid waste management, the roles and responsibilities of the various agencies involved

should be defined clearly and a coordination mechanism be established. This can be done without drafting new legislation or amending the existing one, which is normally a time-consuming exercise in any country. A working group involving officials from the various agencies can be set up to discuss initially the roles and responsibilities of their respective agencies, and the working group can be later upgraded to an administrative committee or task force. (Elisa Eiseman, 1998)

### **Developing Human Resources**

For sustainable solid waste management in developing countries, human resource development should always be part of the external support package. Without local human resources, a collaborative project initiated by external support will not be able to continue. To develop human resource with technical expertise in solid waste management in developing countries, there are three strategically important groups for external support, namely (i) key personnel in the national coordinating unit of the central government (ii) operational managers of selected local governments, and (iii) university and other higher educational institutions. Among these target groups, the strengthening of human resources in the national coordinating unit and one or two selected local governments is the first priority and should be done in short term while support to higher educational institutions is a long term programme. (Cointeen S. 1982)

### **Supporting Strategic Planning and Follow-up implementation**

Overall solid waste management plans at both the national and local levels are essential for utilizing resources most effectively, and providing a frame of reference for potential external support. Therefore, the formulation of national and local strategic plans for solid waste management should be considered at the initial stage of the external support package. (Javera D, 1993)

### **Developing Self-financing schemes**

The governments of developing countries have limited funds for solid waste management and must develop measures to reduce and recover the

expenditures and increase revenues where possible. They need to turn their solid waste management systems to more self – financing programmes. External support can be effectively used to develop different alternative cost- cutting, cost recovering, and revenue – raising schemes (e.g., waste minimization, deposit – refund system for recyclable materials, import or sales tax on certain packaged products, collection of user service charges, etc) and implement pilot studies on these economic incentive measures. (<http://www.cfe.cornell.edu/wm> )

### **Raising Awareness of the Public and Decision Makers**

Effective management of solid waste requires the cooperation of the general public. Lifting the priority of and allocating more resources to, the solid waste management sector needs the support from decision makers. It is therefore, important to ensure that public and decision makers' awareness' activities are incorporated into the external support package. The aim of these activities is normally long term and it takes some momentum to build up before the effects are realized. But once the interest of the public and decision makers in improving solid waste management are created, the sustainability of solid waste management projects will be significantly improved. (Yhdego Michael, 1994),

## **CHAPTER THREE**

### **RESEARCH METHODOLOGY**

#### **3.0 Introduction**

The study was basically carried out in Makindye Division Wabigalo Parish, an area towards the South East of Kampala City. Wabigalo borders Kisugu parish to the South, Kabalagala to the West, Central Division to the East and Kibuli Parish to the North.

Wabigalo is made up of twelve zones namely; (Centenary, Kitoro, Kalina, Mivule, Market A&B, Church, Project, Kiezia, Muwafu, Central and Upper zones). It has a population of 18,164 residents (9340 Males, 8824 Females) with a density of 300 people per square kilometer (2002, National census).

Its mainly a pre-urban area with its community engaged in a mixture of commercial trade with petty trading dominating, fish business, market vending in food stuffs etc, small scale workshops, urban farming etc.

#### **3.1 Research design**

This was entirely cross-sectional that employed both quantitative and qualitative data collection methods.

#### **3.2 Study Population**

The study populations covered 100 adult people of both sexes, residents in Wabigalo Parish.

#### **3.3 Study units and respondents**

Study units were 40 households and the respondent's house holds heads or any adult available during data collection will be 52.

### 3.4 Sample size determination

This study sample from the Parish "n" was calculated using the standard Fisher Laing and stock of formula (1983)

$$n = \frac{z^2 pq}{d^2}$$

Where: n = number of study participants/desired sample size.

z = 1.96 (corresponding to 95% confidence limit)

p = prevalence established to be 40% (Nuwagaba et al Environmental crisis in pen-urban settlements in Uganda).

$$q = 1 - p$$

d = study precision 0.1 =%

$$n = \frac{(z^2) p (1-p)}{d^2}$$

$$= \frac{(1.96^2) 0.4 (1-0.4)}{0.1^2}$$

$$= \frac{(3.842) 0.4(0.6)}{0.1^2}$$

= 92 participants.

**N.B:** A total of 100 participants/respondents took part in the study to which was later taken for mis-reporting etc.

## 35 Study Variables

### 3.5.1 Dependent variables

These included solid waste related diseases like Diarrhea, malaria prevalence etc

### 3.5.2 Independent variables

These included social demographic characteristics, age, sex, marital status, occupation, religion, knowledge, attitudes and practices.

## 3.6 Sampling procedure

To determine the number of respondents, sampling proportionate to size was used per zone. Using  $n = \frac{X}{N} \times 100$

N

Where  $n$  = no. of respondents predicted

$x$  = zone population proposed

$N$  = total population estimated to be sampled in the study 5210.

A list of zones and their populations were obtained in Makindye Division, That is to say sampling from names will be written on paper, put in a box and they were randomly picked to get four (4) zones for the data collection.

### **3.7 Data Collection Tools**

#### **3.7.1 Quantitative collective data**

Tools were mainly structured questionnaires with both closed and open ended questions.

Face — to —face interviews were carried out with household heads or in their absence any adult around from the family can help out.

#### **3.7.2 Qualitative Data**

Qualitative data was obtained through observation checklist guide. Key informants and focus group discussions with participants who were chosen on their consent to participate in the study e.g. LC Officials, Health workers, Parish Chiefs.

### **3.8 Data Management and analysis**

Quantitative data: This data was filed, edited, coded and tabulated. Tallying was used to get respondents who belonged to particular themes and tallied against each of these themes.

Tables of number of respondents were thereafter be compiled and frequency distributions and percentages calculated.

Analysis by using percentages, frequencies according to study objectives and variables were brought in.

Interpretation was done through quantitative and statistical analysis. Qualitative data from observations and group discussions were context, analyzed as it is proposed to come according to the theme and also quotations were taken.

### **3.9 Quality control**

Data collection tools e.g. questionnaires were pre-tested before actual collection of data and thereby up-dating the questionnaire. Data collection Assistants involved were trained for one day in conducting the interviews and accurate recording.

The principle investigator was supervised the Assistants and interview schedules were checked at end of every day.

### **3.10 Ethical considerations**

Kampala International University, Faculty of Social science approved the research proposal and thereafter gave me clearance to conduct the study I have proposed.

Permission was sought from Kampala City Council Makindye Division and the Wabigalo Parish.

Respondents consent was sought and information was confidentially assured before administering study tools:

### **3.11 Results dissemination**

The findings were submitted to Kampala International University, Faculty of Social science as a partial fulfillment of requirements for Bachelor of Development Studies and Kampala City Council, Makindye Division.



## CHAPTER FOUR

### DATA ANALYSIS, PRESENTATION AND INTERPRETATION

#### 4.0 Introduction

This chapter highlights the research findings which entailed social- demographic characteristics of the respondents, their knowledge, attitude in regard to solid waste management and the practices obtaining in area of study.

**4.1 Socio-demographic characteristics of the respondents. These are shown in table below.**

**Table 4.1 Socio-demographic characteristics of the respondents.**

Variable	Frequency(n = 100)	Percentage
<b>Age</b>		
20 & below	8	8.0
21—40yrs	72	72.0
41—60yrs	20	20.0
<b>Sex</b>		
Female	68	68.0
Male	32	32.0
<b>Occupation</b>		
Business person	40	40.0
Self employed	22	22.0

Civil servant	05	05.0
House wife	33	33.0
<b>Education level</b>		
None	11	11.0
Primary	43	43.0
Secondary	38	38.0
Tertiary	08	8.0
<b>Marital status</b>		
Single	27	27.0
Married	61	61.0
Separated	9	9.0
Widowed	3	3.0
<b>Religion</b>		
Muslims	18	18.0
All Christians	82	82.0
<b>Tribe</b>		
Baganda	26	26.0
Banyankole	13	13.0
Basoga	06	6.0
Ateso	08	8.0
Munyoro	12	12.0

Luo	16	16.0
Others	19	19.0

The study findings reveal that most respondents 72% (70/100) are between the ages of 21-40 still very productive, and that the majority of these 68% (68/100) are females.

Majority of respondents 40% (40/100) are businesspersons and 33% (33/100) are housewives.

Further results show that most respondents 89% (89/100) had attended school at least up to Primary level.

The biggest number 61% (61/100) are married, 27% single, 9% separated and 3% widowed. Majority of respondents 82% were of Christians denominations.

Most respondents 26% were Baganda and 19% being from other tribes of Uganda other than Banyankole 13%, Basoga 06%, Ateso 08%, Banyoro 12% and Luo 16%.

#### **4.2 Knowledge and attitude of solid waste management.**

Community knowledge about solid waste management 92% (92/100)

The majority of respondents said they understand what good solid waste management is.

##### **Good solid waste management**

Of the 92% (92/100) respondents who said they understand good solid waste management, 66% agreed the collecting, storing and disposing on Kampala City Council skips is a good solid waste management method, 41% (41/100) citing burning it.

4.2.3.2 Knowledge about the problems of solid waste disposal Majority 96% (96/100) of respondents affirmed that solid waste disposal is big problem in their area.

**Table 4.2: Community practices in Solid waste management**

Variable	Frequency	Percentage
Lack of/inadequate Kampala City Council skips or dumping sites	64	66.7
Careless/un-cooperative communities	62	64.6
Poverty/not able to pay private collectors	60	62.5
Lack of awareness	41	42.7

Most of the respondents 66.7% (64/96) were aware that solid waste management is a big problem because there is lack of/inadequate Kampala City Council skips or gazetted dumping sites in the area.

64.6% (n=96) said the problem is due to a careless/un-cooperative community while 62.5% agreed poverty is the main cause.

However, 42.7% (41/96) said the whole problem is due to lack of awareness in the community.

### 4.3 Challenges faced by the Wabigalo community in relation to good solid waste management

#### 4.3.1 Community attitudes about solid waste management challenges

**Table 4.3.1 Respondent's responses/reasons for the indiscriminate littering of solid waste/refuse.**

Variable	Frequency (n=100)	Percentage
Long distance to only skip	58	58
Poverty/no money to pay private collectors.	28	28
Delayed collections by Kampala City Council	10	10
It's the duty of Kampala City Council to dump it off.	04	4
Total	100	100%

Majority 58%, feel the long distance to the only available Kampala City Council skips results in to people dumping refuse at any nearest roadside, channel etc, 28% (n=100) attribute the littering to poverty hence failure to paying private collectors.

On the other hand, 10% said Kampala City Council delays to collect refuse giving people an excuse to dump in any near open space/alley, 4% insisted it's the duty of the authority/ Kampala City Council to pick all the solid waste in the area since people pay taxes. (More than one response).

### 4.3.2 Attitude of respondents about who should be responsible

Variable	Frequency (n=100)	Percentage
Lack of space where to dispose off solid waste	88	88
Community has to take up some responsibility	36	36
The employment of private collectors to assist Kampala City Council	6	6

The majority 88% (88/100) of respondents sited Makindye Division (Kampala City Council) giving reasons like lack of space where to dispose off solid waste in their area, 36% (36/100) recognized that the community has to take up some responsibility, while 6% (6/100) sited the employment of private collectors to assist Kampala City Council which takes long periods to collect and dispose off solid waste.

### 4.4 Practices on solid waste management that are in place amongst the residents of Wabigalo Parish

#### 4.4.1 Methods/practices of solid waste storage

Variable	Frequency (n=100)	Percentage
Refuse is kept in polythene bags (Buveera) before disposal.	68	68
Use open dumps near their homes as collection and storage that is dump on generation/no storing.	56	56
Solid waste is taken to Kampala City Council	51	51
they keep solid waste in dustbins near their business/premises	16	16

68% (68/100) of respondents said their refuse is kept in polythene bags (Buveera) before disposal.

56% (56/100) said they use open dumps near their homes as collection and storage that is dump on generation/no storing.

**While**

51% (51/100) of the respondents said the solid waste is taken to Kampala City Council skips/where they are usually supposed to be placed.

16% (16/100) said they keep solid waste in dustbins near their business/premises and 14% (14/100) said their refuse is burnt.

**4.4.2 Collection tools of Solid wastes used in Wabigalo Parish**

Variable	Frequency (n=100)	Percentage
Kampala City Council Makindye takes too long to collect solid waste from the community.	92	92
Do not wait for Kampala City Council as they are more regular private people	6	6
Do not know when Kampala City Council collects solid waste.	2	2

The majority of respondents 92% (92/100) said Kampala City Council Makindye takes too long to collect solid waste from the community.

While 6% (6/100) said they do not wait for Kampala City Council as they are more regular private people and 2% (2/100) said they do not know when Kampala City Council collects solid waste.

Majority of residents reported delayed collection of solid waste for disposal by Kampala City Council. As Kingslay observed, this inadequate collection and unmanaged disposal of waste affects human health and economic productivity. Majority of residents lack gazetted central collection facilities for their waste and where it was available, they were full and oozing with filth.

This indeed calls for a revised system that involves the participation of the residents as a good solid waste management system involved generation, storage, collection, and transportation and disposal methods acceptable to both the residents and the local authority.

#### **4.4.3 Central collection of solid waste**

The majority 88% (88/100) of the respondents did not have near central collection facilities to take their solid waste.

While 12% (12/100) said they had central collection facilities however, skips are always full and oozing with filth.

Of the 88% (88/100) of respondents who said they do not have central collection facilities, the majority 61.3% (54/88) said they use open dumps near their homes as their central collection facilities that is areas without Kampala City Council skips but where Kampala City Council usually collects from, while 39% (34/100).



## **Interpretation of the results**

### **4.5 Socio-demographic characteristics of respondents**

Most of the respondents were aged between the ages of 21-40 years that is an active and productive age bracket and the majority here being females. This majority corresponds with the rural-urban life style.

The occupation of most respondents is in line with the major occupation in urban life which is trading hence a higher percentage of business persons, and these were followed by house wives who are also in line with the fact that the area is basically a trading/commercial and residential.

A remarkable percentage of respondents have an education, at least up to primary level. This is an indication that the population in the area is literate which is an important means of making informed decisions and ease communication in this multi-tribal area as revealed.

The majority of respondents were Christians followed by Moslems that divided corresponds with most areas in the country and this religious affiliation also dictates who or what persons take charge of household cleanliness and keeping live solid waste collection and disposal.

### **4.6 Community knowledge about solid waste management**

#### **4.6.1 Good Solid Waste Management method**

Almost all the residents acknowledged that they were aware of good Solid Waste Management. And most respondents agreed that a good Solid Waste Management method in the area is collecting the waste, disposing and storing it on Kampala City Council skips which is later dumped at Kiteezi landfill.

This is in line with what is attributed in the Kampala City Council Makindye Division three year development plan 2002 that proper disposal on Municipal Solid Waste is very important in Municipal Solid Waste Management. That there

are several methods of managing solid waste amongst which include composting, incineration and use of sanitary land fills.

#### **4.7 Knowledge on Solid Waste Management challenges**

A remarkable number of almost all residents acknowledged that Solid Waste disposal is a problem and a big challenge in the area.

And more than half of the respondents reported that the challenge of Solid Waste Management stems from lack/inadequate Kampala City Council collection skips, un-cooperative/careless community and poverty that is a hindrance to paying for solid waste disposal to private collectors.

This finding corresponds with the Cornell waste management Website that attributes challenges to solid waste management on insufficient solid waste disposal, collection and transportation which city dwellers face including waste facilities.

#### **4.8 Attitude of residents about Solid Waste Management challenge**

##### **4.8.1 Attitude of indiscriminate littering**

Majority of respondents attributed the poor attitude of residents indiscriminately littering of Solid Waste to the long distance to the only skip in the area, inability (poverty) to pay private collectors and delayed collections by Kampala City Council.

These inadequacies by the authority, has given the residents an excuse to dump solid wastes in any near open un-developed spaces or plots in drainage channels etc.

More than half of residents as well perceived and insisted solid waste disposal is the duty and responsibility of Kampala City Council as taxes are paid to it to avail social services to them.

This perception and attitude towards Solid Waste Management corresponds with the finding in the East African Newspaper of June 1995 which noted that Nairobi City Council blames the poor Solid Waste Management situation on lack of adequate equipment but that experts have pointed out that it has also a great deal to do with attitude in that most residents perceive waste management as solely a responsibility of the City Council.

And indeed when it came to who should be responsible for solid waste disposal, the majority of respondents pointed to the local authority, Makindye Division.

Residents store/collect their solid waste in polythene bags (buveera) before disposal while others dump off waste, as it's generated, no storing. Others acknowledged taking their solid wastes to Kampala City Council skips/bins and a smaller number use dustbins placed by their premises.

The use of dustbins, dumping on council skips and storage in polythene bags is a good initiative however; the filled-up polythene bags shouldn't be littered indiscriminately or burnt rather they should as well be taken to the nearest council skips.

Regardless, polythene bags contradict description of a good solid waste storage facility that should be leak proof of adequate size and always covered (Hobson 1969).

The findings also correspond with the observations made by Nuwagaba et-al where he asserts that over in Kampala 40% of households dispose off solid waste in open spaces/indiscriminately, 35% in to drainage channels, and only 25% in refuse collection bins/skips.

## CHAPTER FIVE

### DISCUSSION, SUMMARY OF KEY FINDINGS, CONCLUSION AND RECOMMENDATIONS

#### 5.0 Introduction

This chapter mainly deals with summary of key findings, conclusions and recommendations related to challenges of solid waste management in Wabigalo Parish, Makindye division, Kampala District from the finding and analysis made after conducting the study.

#### 5.1 Summary of the key findings

The summary of the findings were presented in accordance with the research objectives of the study as follows; To examine the community knowledge and attitude of solid waste management, To assess the community practices in solid waste management, To find out what challenges are faced by the Wabigalo community in relation to good solid waste management in Wabigalo parish, Makindye division, Kampala District.

The study found that, majority of the respondents said that lack of or hardly no Kampala City council skips or dumping sites was the major problem as to why solid waste disposal is still a big problem in Wabigalo Parish whereas ignorance (lack of knowledge) which the respondents said it was also commonly a limitation in Wabigalo parish, Makindye division upon solid waste management which was noted with close to 42.7% of the respondents and poverty/ inability to pay private collectors also as a problem to poor solid waste management and finally a least percentage attributed to carelessness/uncooperative communities procedure.

On material a material basis which was the actual feedback, the biggest of the interviewees said that Long distance to the few garbage bins around and poverty/inability to pay private collectors were the most hindering blocks at the

parish while some interviewees emphasized delayed collections by the Kampala city council authorities were the mostly purchased services whereas 58% of the filled questionnaires said that the duty of Kampala city council authority to dump the garbage off was the mostly criticized service.

## **5.2 Conclusions**

The study was carried to assess the challenges of solid waste management in Wabigalo basing on knowledge, attitude and practices in the study area. The following conclusions were drawn:-

### **Solid Waste Management knowledge**

The residents were knowledgeable about the good solid waste management methods and challenges posed by solid wastes in their area.

### **Attitude towards Solid Waste Management in their area**

Delayed collection, lack of or inadequate central collection and storage sites/skips and poverty/inability to pay private collectors accounts for the poor attitude hence indiscriminate dumping in open spaces, drains etc. Residents perceive its Kampala City Council responsibility to dispose off Solid Waste.

### **Solid Waste Management Practices in the community are:**

Collection and storage in polythene bags.

Disposals on to Kampala City Council skip.

Open dumping on generation in to open spaces.

Use of dustbins to a lesser extent and burning.

However, the community/residents are not co-operative with the local authority.

### **5.3 Recommendations**

Kampala District to assist Makindye Division promote private service providers and community participation through promotion of local CBOs and Associations.

Makindye Kampala City Council health and Environment team to, Offer more participatory support supervision to identified private providers and community association.

Mobilize and sensitize the residents on proper and responsible Solid Waste Management and participation.

Makindye Kampala City Council to pass by-laws for households to sort their solid waste by type and promote re-cycling to reduce on the big volumes generated daily.

Kampala City Council Makindye and private associations to lobby for outside/more funding.

### **5.4 Areas for further research**

The study recommends that further research should be conducted to find the challenges of solid waste management.

Further research should be conducted to establish the practices on solid waste management that should be put in place or improved amongst the residents of Wabigalo parish, Makindye Division Kampala district This might provide an alternative way out as how to improve solid waste management in the parish.

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## APPENDICES

### APPENDIX I

**Questionnaire to the residents of Wabigalo Parish, Makindye division  
Kampala District.**

My name is *Nakanwagi Aisha Matovu* a student of Kampala International University. Am carrying out a study on the topic; "**Challenges of solid waste management, a case study of Wabigalo Parish, Makindye Division,**" and Kampala District. The out come of this study will be for academic purpose only. All the information disclosed to me shall remain confidential.

You are requested to give the answer as truthfully as possible to the questions below and bear in mind that any information you give will be used for the benefit of the community and will be kept confidential.

*Thank you: (Answer as appropriate)*

Date of interview: \_\_\_\_\_

Interviewer: \_\_\_\_\_

City: \_\_\_\_\_

Division: \_\_\_\_\_

Parish: \_\_\_\_\_

Zone /Village: \_\_\_\_\_

Household number: \_\_\_\_\_

#### **a) Demographic Characteristics**

1. Age of respondent \_\_\_\_\_

**2. Sex of household head**

Female  Male

**3. Occupation of household head:**

Peasant

Business person

Self employed

Civil servant

Political leader

Religious leader

House wife

Others (specify) \_\_\_\_\_

**4. Education level**

None

Primary

Secondary

Tertiary

**5. Marital status**

Single

Married

Divorced/separated

Widowed

**6. Religion**

Muslim

Catholic

Anglican

Pentecostal/born again

Others (specify)

**7. Tribe**

Muganda

Munyankole

Musoga

Ateso

Munyoro

Luo

Others (Specify) \_\_\_\_\_

**b) KNOWLEDGE**

8. Do you understand what safe/good solid waste management is?

Yes

No

9. If yes, what do you propose it is all about?

Getting rid of it in whatever way.

Collecting, storing and disposing it in KCC skips.

Throwing it where city council can see it.

Burning it.

10. Is solid waste disposal/garbage a big problem in your household/area?

Yes

No

11. If it is a problem, why is it so?

\_\_\_\_\_

\_\_\_\_\_

**c) ATTITUDE**

12. Why do you think a lot of refuse is littered indiscriminately?

\_\_\_\_\_

\_\_\_\_\_

13. Are you willing and prepared to take part in community cleaning exercises say if called upon by LCs or KCC?

If Yes, why? \_\_\_\_\_

If No, why? \_\_\_\_\_

14. Whom do you hold responsible for solid waste disposal in your area?

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**d) PRACTICES**

15. How do you store/keep the solid waste you generate?

In polythene bags/Buveera

Just burn

Dump on generation/no storing

Dustbins

Take to KCC skips

16. How often does KCC or the local authority employ/dispose off refuse from the central collection sites/skips?

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17. How far is the nearest central collection site or KCC skips.

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***Thank you very much for your cooperation***

***"God bless you"***

**APPENDIX III**

**BUDGET**

<b>ITEM</b>	<b>PARTICULARS</b>	<b>UNIT</b>	<b>COST PER UNIT (Ug Shs)</b>	<b>Total (Ug. Shs)</b>
Stationery	Ream of papers	1	12,000	12,000
	Pens	1 Dozen	300	3,600
Field Work	Airtime Cards	20 Credit cards	2,000	40,000
	Transport	4 routes	30,000	120,000
	Library	10 days	1,000	10,000
	Meals & Drinks	7 days	3,000	42,000
	Accommodation	7 nights	10,000	70,000
Data Analysis	Data entry	70	1,000	70,000
Research Report	Type Setting & Printing master copy	500 @ Page	Approx 70 Pages 70	35,000
		Next 2 copies		14,000
	Binding	3 Copies		24,000
Miscellaneous				100,000
<b>Total</b>				<b>470,600</b>