

Solid Waste Management

Study in Bwaise II Parish, Kawempe Division

Waste picking & collection



Waste picking & collection



Final Report, October 2011

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Executive Summary

Introduction and background

Uganda is facing rapid urbanization of 5.1% per annum, leading to overcrowding and the development of slums and informal settlements with poor waste management practices¹. Urban dwellers generally consume more resources than rural dwellers, and so generate large quantities of solid waste and sewage². Waste management in these areas is hampered by multiple land tenure system with many tenants not having a right to the land and therefore not able to manage waste domestically and also the urban authorities are overwhelmed by the sheer volumes of garbage generated³.

Solid Waste (SW) collection is currently one of the most critical services, whose quality and coverage has caused serious public outcry in slum areas⁴. Kampala Capital City Authority (KCCA) acknowledges that the amount of Solid waste generated overwhelms the capacity of the Authority to collect and dispose it given the fact that cost of SW collection is enormous^{3,5}. Out of 1,200–1,500 tones of garbage generated per day, only 400-500 tones are collected giving a collection efficiency of only 40%. This implies that 60% of Solid waste generated daily is not properly collected and disposed which has resulted into indiscriminate disposal by the public⁶.

In order to effectively manage the problem of solid waste, WaterAid Uganda (WAU) has undertaken a study on solid waste management in Kawempe division. To improve her understanding of the current state of urban solid waste management practices of residents of low income areas of Kawempe Division/Kampala, provide information for objective decision making in selecting the mode of interventions and the priority needs of the target groups. Information generated from the study is also intended to guide implementation of the Bwaise II WASH project, formulation of initiatives that promote waste as a source of income and identifying the potential of establishing a plastic waste collection centre

Methods:

The study adopted a combination of qualitative and quantitative designs to get deeper understanding of underlying issues of solid waste management in Bwaise II urban informal settlements. Participants were selected purposively due to their essential knowledge and randomly to estimate the garbage amount generated in the area. Data was transcribed, edited, summarized and analyzed according to the objectives and variables set out in the Terms of Reference. The information was presented in chapters reflecting the key objectives of the study both in narrative, graphical and pictorial forms. The study scope was limited to household and commercial enterprises garbage generated in Bwaise II Parish, Kawempe Division with special emphasis on the Solid waste management cycle from collection to ultimate disposal in Kawempe Division focusing on 8 zones.

Key findings:

1.1 Overview of the Policy and legal frame work relating to solid waste management

The Public Health Act, Cap.281, KCC Solid Waste Management Ordinance (SWMO), 2000, Solid Waste Management Strategy (SWMS), December, 2002, as revised in (2006), Local Governments Act (1997) revised in 2004, The Constitution of Uganda 1995 (amended 2005) and The National Environment (Waste Management) Regulations, S.I. No 52/1999 provides some coverage for solid

¹ MoWE Joint Sector Review Report 2010

² Environmental Resource Limited (ERL), Solid Waste Disposal–Kampala final report, 2009

³ United Nations Human Settlements Programme (UN-habitat), Situation analysis of informal settlements in Kampala: Kivulu (Kagugube) and Kinawataka (Mbuya 1) Parishes, 2010.

⁴ J B Nyakaana, Geography Department Makerere University: Population, Urban Development and the Environment in Uganda: The Case of Kampala City and its Environs, 2009

⁵ Kampala Solid Waste Management Strategy, December, 2002, as revised in 2006

⁶ Republic of Uganda, Office of the auditor general, Value for money audit report on solid waste management in Kampala city council, 2010

waste management in Uganda and Kampala in particular although with some limitations relating to enforcement and sanctions there in.

1.2 Estimation and Nature of the solid waste generated in Bwaise II

Bwaise II generates an estimated 31.423 tones of garbage daily with a composition Biodegradable¹ (76%), Plastics² (4%), Metal³ (3%), Polythene⁴ (8%) and others⁵ (9%). The average per capita solid waste generation rate is 1.284-kg/per person/per day with a high organic content and bulky density. However there were varying per capita generation rates depending on income levels with high-income households (Tebyoreka, Mugowa and Nabukalu zones) generate more wastes than low income households (Jambula, Lufula, Katala zones) but accumulation is higher in low income areas compared to high income settlements due to unavailability of waste collection services.

1.3 Status and Nature of Solid waste management approaches

The study found the following solid waste management approaches employed in Bwaise II which included, waste reduction, dumping, recycling and reuse, composting and incineration /burning. However, recycling and garbage reuse of inorganic materials from solid waste was not well developed by informal sector and such activities were seldom unrecognized, supported, or promoted by the Kawempe urban authority as one of the approaches to support garbage management in the area despite having the advantage of: reducing costs of the disposal facilities, prolonging the site span, and also reducing the environmental impact of disposal sites as the organics are largely to blame for the polluting leache and methane problems.

1.4 Implementation of service delivery obligations and strategies employed

Planning for solid waste

Currently at the division (now municipality under the Kampala Capital City Authority Act 2010), the roles and responsibilities of solid waste management lies in the office of the Town Clerk who is the Principle Accounting Officer at the Division level and responsible for the day today running of the Division among which is solid waste management, the Solid Waste Engineer responsible for the collection, transportation and disposal of solid waste, the Health Inspector responsible for maintaining the division in a healthy environment free from garbage which is one of the public health hazards, the Finance Officer responsible for executing the logistics for solid waste management in the division. However these responsibilities were hampered by, financial, technical and political challenges.

Collection arrangements

Section IV (2) of the Kampala City Council (Solid Waste Management) Ordinance 2000 places the responsibility of collection of solid waste in the hands of Council in this case the division, either by its agents, servants or licensed collectors to ensure that solid waste is collected and conveyed to treatment installations (sites/centers) or approved disposal sites to the extent required to satisfy both public health and environmental conservation requirements. However the division is constrained to meet this role due to both financial and technical challenges leading to waste accumulation in the parish.

Frequency of collection

The same ordinance under section IV (7) stipulates that the frequency of collection of solid waste shall be in accordance with the regulations of the collection agency but shall be regular enough (at least once a week) not to cause a public health nuisance. The study however found that prescribed frequency of collection of solid waste was only maintained in very few places (road sides) due to both logistical like trucks and fuel which were overwhelmed by the amount solid waste generated.

Collection fees

The Council is also empowered to prescribe fees for the collection and final disposal of solid waste by the council under section IV (4) of SWM ordinance of 2000. However findings from the study

show that the Council did not provide guidelines on the amount of fees to be collected for which quantity of solid waste generated. Respondents reported that the amount of fees charged was at the discretion of the private waste collectors depending on the amount and unreceipted in most cases. Generally the licensed private collectors charged between 1,000 shillings to 3,000 shillings which is quite exorbitant for the urban poor while the illegal collectors charged very low fees (between 200 shillings to 1,000 shillings) for collection and they eventually dumped solid waste indiscriminately.

Solid waste disposal

All solid waste collected by the authority in Bwaise II is dumped at the gazetted landfill at Kitezi plus some of that is collected by the private collectors. However much of the solid waste collected by the illegal and unlicensed collectors and some poor informal households dump their garbage in ungazetted places like the roadsides, illegally constituted dumpsites and the drainage channels when it rains due to the costs involved in waste management. It was also reported that Kiteezi is located about 14 kilometers from Kawempe and for each truck that dumps solid waste is charged a fee of 10,000/= Ugandan shillings per trip. This cost in addition to the surging fuel costs, the private collectors are some times forced to dump in areas where KCCA can then collect the waste for final destination which contravenes the management arrangement.

Transportation of solid waste

It was observed that Kawempe division had a fleet of trucks designed to collect and transport solid waste in the study area. In total the division had six (6) box body trucks and five (5) tipper trucks to transport solid waste in the whole division. However by the time of the study only three (03) box body trucks which are specifically designed for solid waste transportation were operational and none of the tippers though not appropriate in transportation of garbage was operational due to mechanical problems. This means with an average of 31 tones of solid waste generated in Bwaise II, the council would need at least one (1) truck to effectively collect, dispose and transport solid waste BUT only three trucks are available for the whole division of 22 parishes which brings the efficiency of the council to only around 30%. In addition None of the private collectors (registered or illegal) had prescribed transport mechanisms of transportation of solid waste where majority of them were using open trucks, bicycles and others carried solid waste on wheelbarrows. These transportation mechanisms contravene the ordinance on which solid waste management is governed in the area.

Community awareness about solid waste

According to the Solid Waste Management Strategy (SWMS) of 2006 Para.7, members of the public are supposed to be educated in matters of waste management such as; sorting/separation of waste according to their categories of organic and inorganic, efficient use of skips, waste recycling, home composting, waste minimization and adherence to waste management laws. It was observed in some community places that an effort towards sensitization and awareness of the local community about solid waste management was under taken in Bwaise II parish. Others included Community integrated development initiatives (CIDI) for establishment of community solid waste management structures, Plan Uganda and AMREF who have been supporting community awareness campaigns and capacity building initiatives.

1.5 Income generation opportunities

In order for community-based waste management to be a success, it must address more than the need for improved environmental management. It must also provide opportunities for income generation and the development of strong community bonds. In Bwaise II together with the support provided by NGOS such as SWAS in collaboration with WaterAid Uganda, a number of income generating activity initiatives were being practiced by the local community on a small scale while others were solely individual efforts without any kind of support. Among them included making of briquettes from waste, art and craft, artisan and metal works, collection and transportation of solid waste and lastly waste picking and collection.

These findings suggest that there is a great potential which is untapped in Bwaise II regarding solid waste as an income generating venture. However there is need to support the local community with both capacity building in business management, working capital, marketing for their products and the division authorities also need to recognize these ventures as not only business opportunities for the local people but also as a waste reduction strategy to get rid of solid waste in the community.

1.6 Feasibility of establishing and designing a self sustaining low cost plastic waste collection centre in Bwaise II:

The extremely long periods required for natural decomposition, waste plastic is often the most visible component in waste dumpsites. Plastic waste recycling can provide an opportunity to collect and dispose of plastic waste in the most environmental friendly way and it can be converted into a resource. The assessment of the plastic collection center feasibility was guided by dimensions of business viability framework by Thompson (2003) looking at the market viability, technical viability, management viability, economic and financial viability and lastly the exit strategy viability.

1.7 Challenges and constraints of garbage management

Solid waste management is one of the serious problems in Kawempe division and Kampala district as a whole that has undermined the council's capacity for proper management and efficient disposal. Kawempe like other division /municipalities in Kampala in general enjoyed the urban administration monopolistic statutory requirement of collection, storage and disposal of waste until of recent in 2006 when some private waste collectors were brought on board⁷. However a number of challenges in management of solid waste have remained and these challenges can be grouped into institutional challenges, social economic, infrastructural and legal challenges.

1.8 Proposed Strategies for solid waste management in Bwaise II

The problem of solid waste in Bwaise II arises from a lack of recourse to adequate public services that allow for appropriate waste removal, poor infrastructure, legal and institutional challenges coupled with and social and economic challenges leading to haphazard and inappropriate disposal methods, such as the dumping of waste in public places, drainage channels and the road reserves. Indiscriminate disposal of solid waste in Bwaise II is widely spread and the extent of the problem now requires the direct intervention of both the Division/Municipality in collaboration with the Civil society and the community them selves. The following strategies are however suggested which include, waste avoidance, levying and collection of solid waste fees/tax on generators, integration of informal solid waste reuse mechanisms into KCCA solid waste management strategy and solid waste reuse.

1.9 Conclusions

Conclusions

- The collection, transportation and disposal of solid waste in Bwaise II are the responsibility of Kawempe division and its agents or appointed private collectors.
- The division (Kawempe) is required through its agents, servants or licensed collectors to ensure that solid waste is collected and conveyed to treatment installations or approved disposal sites to the extent required to satisfy both public health and environmental conservation requirements.
- The responsible person at any dwelling unit (home), industrial or institutional establishment (premises) or ground within the corporate limits (center) of the city where solid waste accumulates is responsible for the solid waste until it is collected by the council.
- Bwaise II generates an estimated 31.423 tones of garbage daily with a composition Biodegradable (76%), Plastics (4%), Metal (3%), Polythene (8%) and others (9%).
- The per capita solid waste generation rates is a function of income levels with high-income households (Tebyoreka, Mugowa and Nabukalu zones) generate more wastes than low income

⁷ Kampala City Council, Solid waste management strategy 2006

households (Jambula, Lufula, Katala zones) but accumulation is higher in low income areas compared to high income settlements due to an availability of waste collection services.

- Great potential exists income generation which is untapped in Bwaise II regarding solid waste as art and craft, briquette making, artisan and metal works, garbage transportation and waste picking. However there is need to support the local community with both capacity building in business management, working capital, marketing for their products.
- Recycling and garbage reuse of inorganic materials from solid waste though not well developed in Bwaise II. Such activities are seldom unrecognized, supported, or promoted by the Kawempe urban authority as approaches to support SWM in the area despite having the advantage of: reducing costs of the disposal facilities, prolonging the site span, and also reducing the environmental impact of disposal sites.

1.10 Recommendations

- There is need to revise the solid waste ordinance of 2000 to include practical elements and arrangements towards imposition of solid waste fees and its collection to effectively manage solid waste in the areas.
- The Division should carryout massive sensitisation of the local community on proper solid waste management from household level on issues such as solid waste avoidance, shorting, reduction and reuse.
- The division authority should integrate, recognise and support income generation activities as part of the municipality solid waste management strategy to effectively manage the problem of solid waste in the area.
- The divisions should operationalize the SWM ordinance including the enforcement of the provisions therein. The public should be sensitized on the provisions in the by-law and the role of the enforcement department in solid waste management.

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2 ACRONYMS

CBO	Community Based Organization
CSO	Civil Society organization
FGD	Focus Group Discussions
GoU	Government of Uganda
KCC	Kampala City Council
KCCA	Kampala Capital City Authority
KI	Key Informant Interviews
LC	Local Council
LGA	Local Government Act
MSW	Municipal Solid Waste
NEMA	National Environment Management Authority
SSWARS	Sustainable Sanitation & Water Renewal Systems
SWM	Solid Waste Management
SWMO	Solid Waste Management Ordinance
WAU	WaterAid Uganda

3 DEFINITIONS

Language evolves through common and repetitive use; therefore some terms may acquire different definitions, meaning depending on the context and where they are used. Nobody will be held responsible for adopting a different meaning and interpretation to the following terms, but for the purposes of this report the following terms are understood and applied in the following context.

Council: Urban City Authority (Kawempe Division/Municipality) established under the Local Governments Act, Cap 243.

Disposal site: Any place/area on land on which waste disposal facility is physically located and the final discharge point.

Domestic waste: Any garbage that is generated from residences

Dust bin: A removable receptacle for the disposal of refuse

Refuse/garbage: Includes any waste, whether liquid or solid which is discharged, emitted or disposed in the environment.

Skip: A container owned by the KCCA and made available to residents for their use as part of the council's solid waste collection system.

Solid Waste Management: Encompasses generation, collection, transportation and disposal of waste

Solid waste: Any garbage, refuse, trash and other materials or products including putrescible and non-putrescible waste, organic and inorganic waste, combustible and non-combustible waste, and liquid non-hazardous waste, but does not include hazardous waste or human body parts.

Waste: Includes any matter prescribed to be garbage/refuse/trash, and any radioactive matter, whether liquid, solid, gaseous or radioactive which is discharged, emitted or deposited into the environment in such volume, composition or manner as to cause an alteration of the environment

Household: Individuals who comprise a family unit and who live together under the same roof; individuals who dwell in the same place and comprise a family, sometimes encompassing domestic help; all those who are under the control of one domestic head.

4 INTRODUCTION AND BACKGROUND

Uganda is facing rapid urbanization of 5.1% per annum, leading to overcrowding and the development of slums and informal settlements with poor waste management practices⁸. Urban dwellers generally consume more resources than rural dwellers, and so generate large quantities of solid waste and sewage⁹. Waste management in these areas is hampered by multiple land tenure system with many tenants not having a right to the land and therefore not able to manage waste domestically and also the urban authorities are overwhelmed by the sheer volumes of garbage generated¹⁰.

Further more, there is no comprehensive national urban policy and the institutional framework to regulate and support urban development is weak¹¹. The consequence is that many towns and peri-urban settlements, drainage channels and roads are highly littered³. Some families especially in crowded high density areas do not have access to garbage disposal skips and while private collectors are too expensive for these poor households hence forced to practice indiscriminately dispose off garbage in drainage channels, road sides and abandoned buildings⁴.

Solid Waste (SW) collection is currently one of the most critical services, whose quality and coverage has caused serious public outcry in slum areas¹¹. Kampala Capital City Authority (KCCA) acknowledges that the amount of Solid waste generated overwhelms the capacity of the Authority to collect and dispose it given the fact that cost of SW collection is enormous^{3,12}. Out of 1,200–1,500 tones of garbage generated per day, only 400-500 tones are collected giving a collection efficiency of only 40%. This implies that 60% of Solid waste generated daily is not properly collected and disposed which has resulted into indiscriminate

disposal by the public¹³.

It is estimated that Kampala City Council (KCC) now KCCA spends United States Dollars 1.53 million per month to remove only 30% of the total waste generated (Ngategize 2009). As amounts of solid waste increase, the cost of its removal increases too yet KCCA does not have sufficient resources to completely and efficiently carry out this responsibility. The result has been delays in disposing off this garbage. Also the communities are ignorant of the best way to manage the waste, as there is a little community initiative to undertake collective action.

Given this situation there is need to promote complimentary alternatives such as community initiatives to manage garbage in a sustainable manner in addition to being a potential source of income for the poor.

4.1 Purpose

In order to effectively manage the problem of solid waste, WaterAid Uganda (WAU) has undertaken a study on solid waste management in Kawempe division. To improve her understanding of the current state of urban solid waste management practices of residents of low income areas of Kawempe Division/Kampala, provide information for objective decision making in selecting the mode of interventions and the priority needs of the target groups. Information generated from the study is also intended to guide implementation of the Bwaise II WASH project, formulation of initiatives that promote waste as a source of income and identifying the potential of establishing a plastic waste collection centre.

4.2 Objectives

The study set out to achieve the following objectives:

- (i) Identify the current service status and the nature of solid waste management services in low income communities.
- (ii) Establish the nature of the solid waste generated by households in Kawempe Division
- (iii) Investigate the implementation of service delivery obligations and strategies employed

⁸ MoWE Joint Sector Review Report 2010

⁹ Environmental Resource Limited (ERL), Solid Waste Disposal–Kampala final report, 2009

¹⁰ United Nations Human Settlements Programme (UN-habitat), Situation analysis of informal settlements in Kampala: Kivulu (Kagugube) and Kinawataka (Mbuya 1) Parishes, 2010.

¹¹ J B Nyakaana, Geography Department Makerere University: Population, Urban Development and the Environment in Uganda: The Case of Kampala City and its Environs, 2009

¹² Kampala Solid Waste Management Strategy, December, 2002, as revised in 2006

¹³ Republic of Uganda, Office of the auditor general, Value for money audit report on solid waste management in Kampala city council, 2010



with respect to low income unplanned areas of Kawempe by the Division LG and private operators.

- (iv) Investigate the income generation opportunities for service providers, including small private sector operators, in the provision of solid waste management services (collection, transport, treatment and disposal) that reduce garbage in urban areas and suggest opportunities that can be taken on.
- (v) Identify the obstacles/barriers (economic, institutional, infrastructural, regulatory) to service delivery in low-income settlements experienced by all identified service operators (small private, CSOs, CBOs etc) and which creates the identified gaps
- (vi) Suggest and evaluate community initiatives of solving the garbage problem in Kawempe Division.
- (vii) Identify and suggest possible public policy recommendations, technological innovations, delivery methods and further research (policy and programme delivery) to inform WAU

policy and programme intervention in urban areas.

- (viii) Investigate the feasibility of establishing a self sustaining low cost plastic waste collection centre, location and designing the same.

4.3 Scope of work

The study scope was limited to household and commercial enterprises garbage generated in Bwaise II Parish, Kawempe Division with special emphasis on the Solid waste management cycle from collection to ultimate disposal in Kawempe Division focusing on 8 zones. Other areas of focus included the economic value of garbage generated from households in addition to identifying the potential of establishing a plastic waste collection centre.

4.4 Methods:

The study adopted a combination of qualitative and quantitative designs to get deeper understanding of underlying issues of solid waste management in Bwaise II urban informal

settlements. A series of a detailed WASH related documents and policies were reviewed to get background information to the problem, refining of research tools and the legal framework that govern the management and operation of solid waste services in Kampala city and Kawempe Division in particular. A number (04) of Focus Group Discussions (FGDs) and in-depth interviews (08) were also conducted with key informants, local community, private solid waste operators and Local Government officials in addition to field excursions (04) and estimation of solid waste generated in the study area.

The study participants were selected purposively due to their essential knowledge and randomly to estimate the garbage amount generated in the area. Data was transcribed, edited, summarized and analyzed according to the objectives and variables set out in the Terms of Reference. The information was presented in chapters reflecting the key objectives of the study both in narrative,

graphical and pictorial forms.

4.5 Study limitations

While the scope of the study was well-defined in terms of the target area, geographical and conceptual focus and the methodology was excellently selected to meet the study objectives, the study faced some operation limitations. The limitations included difficulty in accessing some policy documents at Local Government level, withholding of some information, challenges in establishing the garbage collection centers relating to the legality and the place to locate the centers and lastly logistical challenges where the costs of executing the study escalated.

However all attempts were made to minimize these challenges. This included triangulation of information, outsourcing and collaboration with some Local Government officials to access some of this information that was much needed.



5 KEY FINDINGS

5.1 Overview of the Policy and legal frame work relating to solid waste management

The section briefly presents an analysis of the legal and policy framework applicable to Solid Waste Management (SWM) in Uganda and Kampala in particular. The national and area specific (Division and Kampala) instruments are highlighted as well as their relevance to solid waste management. The policy framework is analyzed in terms of general policy guidelines that impact on solid waste management relating to planning, collection, transportation, disposal, awareness and enforcement. In addition, gaps in the laws or policies at the domestic level that poses a challenge to solid waste management in Kampala and Kawempe in particular.

To date, no single document of a legally binding nature, either national or regional has been created to provide for comprehensive solid waste management in Uganda and Kampala in particular¹. However the Public Health Act, Cap.281, KCC Solid Waste Management Ordinance (SWMO), 2000, Solid Waste Management Strategy (SWMS), December, 2002, as revised in (2006), Local Governments Act (1997) revised in 2004, The Constitution of Uganda 1995 (amended 2005) and The National Environment (Waste Management) Regulations, S.I. No 52/1999 provides some coverage for solid waste management in Uganda and Kampala in particular although with some limitations.

5.1.1 The Constitution of Uganda (1995) and Local Government Act 1997

Uganda's local government system has a legally and constitutionally facilitating environment under the constitution of Uganda (1995) and the Local Government Act 1997. It reflects devolution of powers (political, financial, personnel), functions and responsibilities to popularly elected councils and administrative units. These powers include making and implementing development plans based on locally determined priorities; making, approving and executing their own budgets; raising and utilizing resources according to their own priorities; appointing statutory committees, boards, and commissions; making ordinances and by-laws consistent with the 1995 Constitution and

other existing laws, ordinances, and bylaws; hiring, managing and firing personnel; managing their own payroll and personnel systems, and implementing a broad range of decentralized services previously handled by the centre.

The 1995 Constitution also empowers local governments to levy, charge, collect and appropriate fees and taxes for investment in infrastructure and service delivery such as solid waste management. These fees and taxes include rents, rates, royalties, stamp duties, personal graduated tax, exercise duty (a tax on local produce such as crops and animals), market dues and fees on registration and licensing. Only funds that have been budgeted for and approved by the council can be spent.

Policy gaps arising:

The local government Act empowers the councils to collect revenue for service provision but did not provide the different avenues on how to collect such taxes and revenues. Revenue sources presently constitute less than 10% of total local government funding. In situations where, local governments used to depend mainly on graduated tax but this tax was abolished in 2006 and has been replaced by local service and hotel taxes, which local governments are yet to fully understand and implement due to challenges in its collection. What this means is that local citizens have limited leverage on local governments because their contribution to local revenue is quite minimal since also central government contribution is minimal and doesn't come in time which have lead to failure of certain services like solid waste management in Kampala and Kawempe Division/municipality in particular.

5.1.2 The Public Health Act, Cap.281

Section 5 of the Public Health Act, Cap.281, empowers all local authorities like City Council to take all lawful, necessary and reasonably practical measures to safeguard and promote public health. It is also a duty of a local authority to maintain its area at all times in a clean and sanitary condition and prevent the occurrence of any nuisance¹⁴. Section 55 of the Public health Act, Cap.281, in its definition of nuisance, includes un-collected garbage among others.

Policy gaps:

The act prescribes a penalty that is so lineate and

¹⁴ Public health Act, Cap.281

weak of up to eight hundred shillings (800/+) in failure of a person to remove the nuisance. Section 6 (1) Public Health Act, Cap 281: Any person who fails to obey an order by a court of competent jurisdiction to comply with the requirements of a local authority or medical officer of health or otherwise to remove the nuisance shall, unless he or she satisfies the court that he or she has used all diligence to carry out the order, be liable to a fine not exceeding eight hundred shillings for every day during which the default continues.

5.1.3 KCC Solid Waste Management Ordinance, 2000 and Solid Waste Management Strategy, December, 2002, as revised in (2006)

The collection, transportation and disposal of garbage are the responsibility of Kampala City Council (KCC) now KCCA and its Divisions now Municipalities according to section 17 of the KCC Solid Waste Management Ordinance, 2000. KCC is required through its agents, servants or licensed collectors to ensure that solid waste (Garbage) is collected and conveyed to treatment installations or approved disposal sites to the extent required to satisfy both public health and environmental conservation requirements.

According to section 20 (d) of the Solid Waste Management ordinance, 2000, it is an offence for a person to scatter or litter solid waste at any private or public property. Section 5 (1) of the ordinance also prohibits depositing of waste on private property, public street, roadside, or in a ditch, river, stream, lake, pond, channel or in a park, excavation or any other place where it may be or become a public health nuisance.

Legal gaps:

The ordinance lacks the powers to “bite” despite the existence of the law enforcement officials. For example section 39 of the ordinance imposes a fine not exceeding two currency points or imprisonment not exceeding six months for a person who commits an offence under the ordinance but the process of enforcing the penalty is long which make many people dumping garbage to go unpunished.

The ordinance also proposes a fee for solid waste to be borne by the generator of solid waste. However, it doesn't provide a mechanism of collecting these fees which have made fees collection unrealistic hence increasing volume of solid waste generated

in the city as a result of the growing urban population, concentration of industries in the city, poor behavior and consumption habits of residents and inappropriate waste management practices due to limited awareness provided by the Ordinance.

5.1.4 The National Environment (Waste Management) Regulations, S.I. No 52/1999

Section 4(4) of the National Environment (waste management) regulation states that: A person who generates domestic waste shall sort the waste by separating hazardous waste from non-hazardous waste in accordance with the methods prescribed under sub-regulation. Section 5 of the same regulation empowers a generator of domestic waste with or without a license issued under these Regulations, dispose of non hazardous waste in an environmentally sound manner in accordance with by-laws made by a competent local authority. Section 6 (6) provides for a person who, before the commencement of these Regulations was carrying on the business of transporting or storage of waste, shall apply to the Authority for a licence for the transportation of waste or a licence for the storage of waste as the case may be, within ninety days after the commencement of these Regulations. Section 7 (2) also states that a person granted a licence to transport waste shall ensure that:

- a) The collection and transportation of waste is conducted in manners that will not cause scattering of the waste;
- b) The vehicles, pipelines and equipment for the transportation of waste are in such a state as not to cause the scattering of, or the flowing out of the waste or the emitting of noxious smells from the waste;
- c) The vehicles for transportation and other means conveyance of waste follow the approved scheduled routes from the point of collection to the disposal site or plant

Policy gaps:

Enforcement of these regulations have been challenged with weak punitive measures for example anybody contravening the sections of this regulation is only liable, on conviction, to imprisonment for a term of not more than six months or to a fine of not less than three hundred and sixty thousand shillings or both which penalties don't improve or repair the state of the environment degraded.

5.2 Estimation and Nature of the solid waste generated in Bwaise II

5.2.1 Estimation of solid waste

Following from key informant interviews and field excursions, three garbage collection centers were identified in the study area. A random sample of 50 households using a (95% CI) from each zone was selected (400 households in the parish) stratified on location (zone) and type of dwelling (reflected in the quality of housing). All 400 selected households were given one waste collection bags to dump all household waste in those bags for a period of one week. Practically due to the fact that majority of these households are tenant households, each waste collection bag was allocated to 10 households. An enumerator was appointed

to collect and sort waste (biodegradable, plastics, metal, polythene and other categories of garbage) for period of one week.

All garbage for the week from all households was measured in kilograms to estimate its weight. An average of the amount of solid waste generated for the week from the sampled households was multiplied by the total households in the parish/zones to determine the amount of garbage generated per a week. An average of the weekly collection for the parish was used to determine the daily garbage generated per day in per parish and zones.

5.2.2 Estimation of solid waste in the sample HH daily

Assuming an error margin of 10%, the following estimations of solid waste (in Kgs) was generated from Bwaise II in the sampled households:



Table 1: Solid waste estimates

Zone	Plastics	Biodegradable (Everything Organic)	Polythene (Kavera)	Metal	Others (glass bottles, broken clay plates and clothes)	Total SW generated daily	Average HHSW generated daily
Tebyoreka	6.8	318.5	39.1	23	34.2	421.6	8.432
Mukalazi	14.5	171.5	26.6	5.9	23.6	242.1	4.842
Mugowa	4	296.4	23.7	17.2	18.9	360.2	7.204
Nabukalu	16.5	139	12.7	4.6	21.1	193.9	3.878
Jambula	12.1	111.7	6.4	1.3	17.2	148.7	2.974
Katale	10.7	131.7	5.2	3.7	16.5	167.8	3.356
Lufula	10.7	95.4	7.1	2.9	13.7	129.8	2.596
Nakamiro	9.4	168.1	21.2	4.4	19.5	222.6	4.452
							0
Totals	84.7	1432.3	142	63	164.7	1886.7	4.71675

Note: Tebyoreka, Mukalazi, and Mugowa were more affluence compared to Katale, Jambula, Nakamiro, Nabukalu and Lufula zone.

5.2.3 Estimation of daily solid waste generated in Bwaise II

According to the Division Population Projection of 2010, Kawempe Division has a total population of 363,898 people and Bwaise II has a total population of 24,481 people with 6,662 households. Going by this population and the average solid waste generation per household of 4.71675 Kgs, the parish generates a daily solid waste figure of 31,422.989

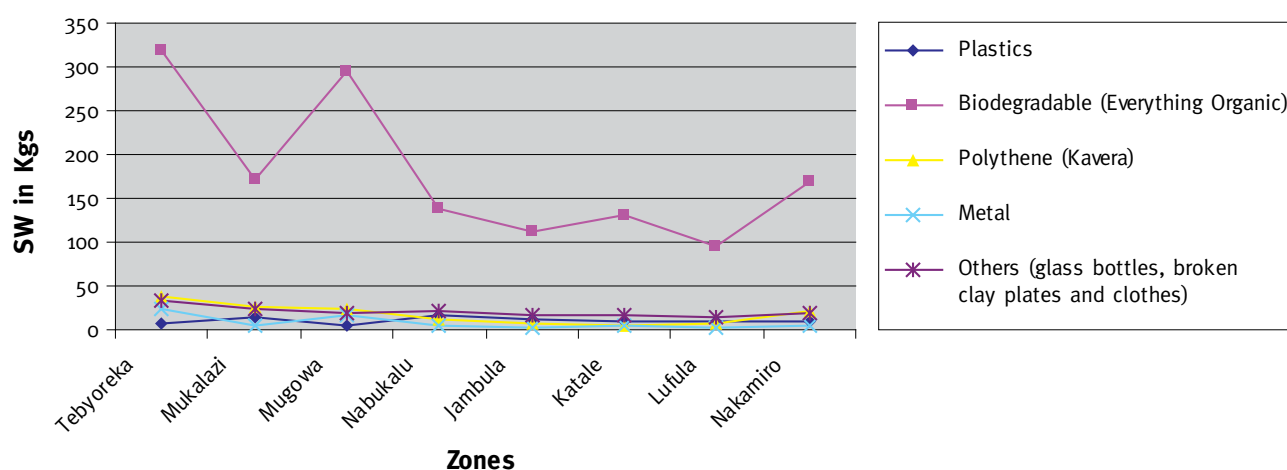
Kilograms approximately 31 tones of solid waste per day with an average solid waste generation per person of 1.284 kilograms daily. These figures also show that the amount of waste generated is a function of the affluence of the household. For example Tebyoreka where the households were better in terms of affluence, they generated more waste compared to the low affluence zones of Jambula, Nakamiro and Katale.



Table 2: Total solid waste per day

Zone	Plastics	Bio-degradable (Everything Organic)	Polythene (Kavera)	Metal	Others (glass bottles, broken clay plates and clothes)	Total SW generated daily	Average HHSW generated daily	Total HH	SW generated per day
Tebyoreka	6.8	318.5	39.1	23	34.2	421.6	8.432	1128	9,511.296
Mukalazi	14.5	171.5	26.6	5.9	23.6	242.1	4.842	789	3,820.338
Mugowa	4	296.4	23.7	17.2	18.9	360.2	7.204	731	5,266.124
Nabukalu	16.5	139	12.7	4.6	21.1	193.9	3.878	1235	4,789.33
Jambula	12.1	111.7	6.4	1.3	17.2	148.7	2.974	625	1,858.75
Katale	10.7	131.7	5.2	3.7	16.5	167.8	3.356	391	1,312.196
Lufula	10.7	95.4	7.1	2.9	13.7	129.8	2.596	931	2,416.876
Nakamiro	9.4	168.1	21.2	4.4	19.5	222.6	4.452	832	3,704.064
							0		
Totals	84.7	1,432.3	142	63	164.7	1886.7	4.71675	6,662	31,422.989

Figure 1 Daily Solid waste generation per zone:



Going by the Per capita solid waste generated in Bwaise II of 1.2 Kgs and the total population of 24,481 people it would require about one (1) truck to effectively collect and dispose off 31 tones of solid waste of 10 tones each making three trips daily. However going by the current situation of trucks available at the division, only 10% of the total solid waste generated can only be collected in collaboration with the available private collectors. Hence much of solid waste remains uncollected and end up being dumped in ungazetted places and causing a public health concern.

5.2.4 Nature of Solid waste generated

Bwaise II like many other informal settlements in Kawempe is faced with rapid urbanization and coupled with the coping (survival) strategies which are excessively straining the existing socio-economic facilities and under-investment in new ones. One of the environmental consequences of rapid

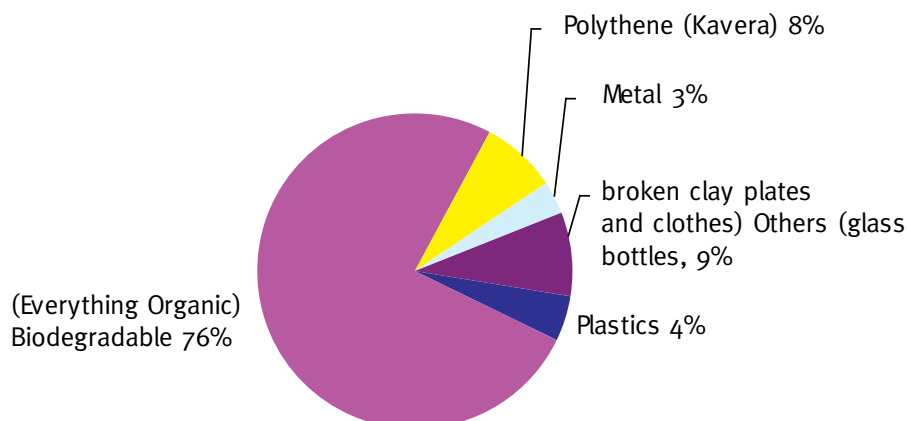
urbanization that has remained a serious challenge for urban management is the amount of solid waste generated. The solid wastes generated in Bwaise II are from diverse sources that include; Domestic, Commercial activities, Industrial activities, Hospital, Clinics, Offices, Building Contractors, Schools and Colleges. For purposes of this study only solid waste from households, business enterprises (kiosks, shops and restaurants (food related ventures) were considered.

Bwaise II generates an estimated 31.423 tones of garbage daily with a composition Biodegradable6 (76%), Plastics7 (4%), Metal8 (3%), Polythene9 (8%) and others10 (9%). The average per capita solid waste generation rate is 1.284-kg/per person/per day with a high organic content and bulky density. However there were varying per capita generation rates depending on income levels with high-income households (Tebyoreka, Mugowa and Nabukalu zones) generate more wastes than

low income households (Jambula, Lufula, Katale zones) but accumulation is higher in low income

areas compared to high income settlements due to unavailability of waste collection services.

Figure 2 Solid waste types generated



It was also noticeable that HH produced more biodegradable while business establishments produced more of plastic bottles and polythene bags. Also the small volumes of plastic and metal among all the solid waste generated in all zones is a function of the economic value attached to plastics and metal where they are collected for money by waste pickers.

Solid waste generation by establishment

Commercial buildings like shops, kiosks and bars produced more polythene bags, paper and plastics due to their poor packing habits. Common among all commercial building and business establishments of this nature were plastic water bottles, packing bags made out of polythene for either drinking water or juices while others were used to wrap goods for

market by the producers and bottle straws. Food kiosks another form of business establishments involved in this study were the biggest generators of biodegradable waste mainly from food peelings, food leftovers and other waste produced related to food preparation.

Important also to note was the pattern of accumulation in the study area. It was noticeable that although a lot of plastics and metal were generated from the households and business establishments, the amount of which was found at the dumping sites and that finally went through the dumping sites was considerably very low. This is related to the economic value which people attached to these waste categories where they were picked for money by both the generators and waste pickers.



5.3 Status and Nature of Solid waste management approaches

Given the large number of individual issues and specific problems in various municipal solid waste management systems, it would seem tempting to address individual issues as they arise and apply local fixes, so as to keep collection and disposal services operating continuously as efficiently as possible. Indeed, in the short term, this is likely to be a good approach.

In considering the long term, however, it is apparent from the scope of problems and the external factors brought to bear upon municipalities that a broader, more integrated set of solutions will be necessary in order to adequately address MSW systems in the future. UNEP calls this sound practices. With that in mind, sound practice is a technology or policy that embodies a reasonable balance of feasible, cost-effective, sustainable, environmentally beneficial, and socially sensitive solutions to SWM problems. In other words, sound practices function together to achieve defined solid waste policy goals, while appropriately responding to the entire set of conditions that constrain the choices available in specific SWM decisions. The study however found the following solid waste management approaches employed in Bwaise II

5.3.1 Waste reduction

This seemed the easiest and most effective way of managing solid waste among Bwaise II informal settlement residents. Waste reduction by definition refers to scaling down on the amount of waste to be disposed off. This is a strategy that seems simple in concept but with great potential in reduction of the amount of garbage generated in the area. However the amount of waste produced and subsequently deposited was often a function of culture and affluence.

For example residents of Bwaise II have developed a strategy of reducing the amount of waste by appropriately allocating would be garbage into other uses which greatly reduces the amount of garbage generated. A case in point are the banana peelings which are one of the most garbage generated in the area are often collected for animal feeds and sold off for money, the Matooke stocks are also used in cooking food, while some polythene bags and sacks are also used as banana leaves used in cooking food and lighting the charcoal stoves. However, this strategy was much common in very low income households (Jambula, Katale and Lufula zones) who have adopted garbage reduction strategies as a means of meeting household needs.

5.3.2 Recycling and reuse

One of the approaches observed in Bwaise II to



manage waste was by separating or sorting waste generated and eventually using it for other form of production. Separating waste materials at the household level occurred at a low extent (except for banana peelings which were put aside for the collectors) with majority of the households not practicing separation and sorting.

However sorting was much of a commercial venture mainly dealing in plastic bottles for recycling and packaging, bottle straws for crafts like baskets mats and steel and aluminum products for fabrication and melting for industrial use. In fact among all the sorting places, steel and aluminum products were the most important and expensive with a kilo ranging between 500-1,000 Ugandan shillings. Following in-home retention of valuable material, waste-pickers bought or picked for free most valuable materials either before garbage is transported or deposited at a dumping site especially in the middle-income zones of Tebyoreka and Mukalazi. Other collection methods included waste pickers venturing into garbage pits/skips or drainage channels to pick up plastic bottles. In these instances, there was little need for additional encouragement of recycling and garbage management.

Important to note was recycling and garbage reuse of inorganic materials from solid waste was not well developed by informal sector and such activities were seldom unrecognized, supported, or promoted by the Kawempe urban authority as one of the approaches to support garbage management

in the area despite having the advantage of: reducing costs of the disposal facilities, prolonging the site span, and also reducing the environmental impact of disposal sites as the organics are largely to blame for the polluting leache and methane problems.

5.3.3 Composting

Compositing was another approach to solid waste management used in Bwaise II parish most especially in the affluent zones of Tebyoreka, Mukalazi and Mugowa zones most in household with some land ownership and fenced off structures as somewhat more low-technology approach. However, the compositing did not follow the correct steps of composting. What was common was a pit where garbage is dumped indiscriminately for a period of time. When the pit is full it was either drained and the refuse sent to the back yard garden and the same pit is used up again.

This approach had many advantages such as reducing the amount of waste requiring ultimate disposal, extending the life of the pit. When done correctly, the end result becomes a useful product, capable of being used at the household or farm level to augment soil nutrient levels and increase organic matter in the soil, increasing soil stability. If the product is of high enough quality and markets exist, the product can be sold. However marketability of the compost manure was something the residents had not explored.



5.3.4 Dumping

The dumping of solid waste was the most common solid waste management approach in Bwaise II. Solid waste was either dumped illegally according to the NEMA Act and the Kampala Solid waste management strategy and ordinance of 2006 and 2000 respectively. Garbage was seen in most zones dumped in ungazetted KCCA collection centers, Skips, sacks and other illegally deposited in abandoned buildings, along the road sides, bushes and drainage channels which some times collected by KCCA or private collectors such as Hilltop, Urban cleaners, Norema and bicycle boys and dumped in the landfill in Kitezi.

Dumping in landfills is definitely the most prevalent form of ultimate garbage disposal. The landfill is located in Kiteezi where KCCA is dumping garbage but it is nothing more than open, sometimes controlled dumps. The difference between landfills and dumps is the level of engineering, planning, and administration involved. Open dumps are characterized by the lack of engineering measures, no leachate management, no consideration of landfill gas management, and few, if any, operational measures such as registration of users, control of

the number of "tipping fronts" or compaction of waste. Therefore, what are common in Bwaise II are open dump spaces with no regulation and illegally constituted as a result of the city authority's failure to enforce good garbage management practices and the poor infrastructural development as well as management challenges.

5.3.5 Incineration/burning

Another approach for waste management in Bwaise II was incineration/Burning. It was observed though on a small scale at household level; it is illegal according to the NEMA Act and the Kampala Solid waste management ordinance of 2006. Some residents under took to burn garbage on deposal sites to reduce the amount of waste and subsequently create room for more garbage.

This appeared to be an extremely attractive option, however, with occasional exceptions; incineration was inappropriately done by most residents except for a few clinics. For example an incinerator was visible at one of the clinics but others decried of high financial and operational costs required to implement incineration facilities.



5.4 Community initiatives of solving the garbage problem in Bwaise II

A number of community initiatives in solid waste management were employed in Bwaise II in order to respond to the collection, transportation and disposable inefficiencies of the local authority. Important to note among these initiatives was economic nature under which these initiatives were established rather than the purpose of getting rid of solid waste in the area. This economic nature may also explain why other non monetary initiatives to manage solid waste in the area have since collapsed for example the solid waste management centre established by SSWARS in Nakamiro zone.

5.4.1 Establishment of local solid waste management groups

Residents of Bwaise II in an attempt to manage the solid waste problem in their area, an initiative was taken by a group of young unemployed youth organized under the name Youth United was formed in 2009 to collect, transport and dispose off solid waste from households to areas where the city authority can pick it for final disposal. Using rudimentary tools like wheelbarrows, sacks, bicycles and some times their heads, youth venture into households to pick solid waste at a fee ranging from 500 Shs-1,000Shs depending on the amount of solid waste collected. This solid waste is then taken and dumped on the road side where the council trucks can easily pick it for final disposal in Kiteezi. This initiative is however limited to only three zones of Tebyoreka, Mukalazi and Mugowa where there are more organized households and the ability to pay for the service is higher compared to the other zones. The sustainability of this initiative has however depended on the ability to pay for the service and they are believed to be cheaper compared to the formal private collectors who charge highly for the service.

5.4.2 Establishment of community solid waste recycling centre

The community in collaboration with SSWARS with support from WaterAid Uganda established a solid waste management center. Originally the center was built to build the capacity of the local community on proper solid waste management and how solid waste can be used as an income generating activity. About 200 local people were trained in solid waste management and four income generating

enterprises were established among them was art and craft, briquette making, collection of plastics and scraps and making of composite manure some of which are still on going though a small scale due to limited market for their produce and inefficient capital for investment.

Besides, sensitization the centre through the trained village health teams and the local leadership, there were organized community clean up exercises where solid waste which had accumulated in some places for long were cleared with support from the division which periodically provided trucks during such events. However some of the community leaders interacted with indicated that these community clean up are no longer taking place due to absence of cleaning tools which were then provided by SSWARS and Community Integrated Development Initiatives (CIDI).

Due to both financial and technical challenges, this centre has collapsed since the implementers pulled out. Interactions with the caretaker of the facility revealed that due to the non-monetary nature of the facility, it lacked funds to run its activities since the community thought that everything was free and catered for by the donor.

5.4.3 Individual informal private collectors

In an attempt to close the solid waste management gap in the less affluent and informal settlements of Jambula, Nakamiro, Katale, Nabukalu and Lufula zones in Bwaise II, individual community efforts have sprung up for purposes of solid waste management. Individuals either using their heads, bicycles and carts venture into the households calling for garbage to be disposed off at a fee that is manageable to the urban poor. What was unacceptable for this group though similar to the youth initiative is the dumping of solid waste indiscriminately and their unorganized nature. Other categories under this initiative are the mentally disturbed people who are also used to dump waste any where as long as it leaves the premises of the generator.

Though these community initiatives are in place to help manage the problem of solid waste in Bwaise II, their sustainability is dependent on the ability of the community members to contribute to their operation either through service fees in the absence of core funding, support and recognition from the municipal authority as a solid waste management strategy.



5.5 Implementation of service delivery obligations and strategies employed

The collection, transportation and disposal of garbage are the responsibility of Kampala City Council (KCC) and its divisions according to section 17 of the KCC Solid Waste Management Ordinance, 2000. KCC is required through its agents, servants or licensed collectors to ensure that solid waste (Garbage) is collected and conveyed to treatment installations or approved disposal sites to the extent required to satisfy both public health and environmental conservation requirements.

Section 4 (4 and 5) of the National Environment Act, CAP 153 and National Environment (Water Management) Regulation of 1999 states that: A person who generates domestic waste shall sort the waste by separating hazardous waste from non-hazardous waste in accordance with the methods prescribed under sub-regulation (3) and a generator of domestic waste may, without a licence issued under these Regulations, dispose of non hazardous waste in an environmentally sound manner in accordance with by-laws made by a competent local authority. It is also a responsibility of every Local Authority, according to section 5 of the Public Health Act, Cap.281, to take all lawful, necessary and reasonably practical measures to safeguard and promote public health.

This section however looks at solid waste service delivery and management arrangements put in place by the Kawempe division to manage solid waste in the area specially Bwaise II parish. The analysis of the service delivery and management arrangements have been concentrated on the roles and responsibilities of the division towards solid waste, planning, collection, transportation and ultimate disposal of garbage.

5.5.1 Planning for solid waste

The Constitution of Uganda (1995) with its accompanying acts (Local Government Act of 1997) amended in 2004 provides an enabling environment of all Ugandans to participate in all matters affecting their lives such as management of solid waste. The Local Government Act also reflects devolution of powers (political, financial, personnel), functions and responsibilities to popularly elected councils and administrative units. These powers include

making and implementing development plans based on locally determined priorities; making, approving and executing their own budgets; raising and utilizing resources according to their own priorities; appointing statutory committees, boards, and commissions; making ordinances and by-laws consistent with the 1995 Constitution and other existing laws, ordinances, and bylaws.

However by the time of this study, the division had not undertaken any plan for solid waste management, there were no drawn work plans locally to manage garbage from the division and all the intervention was directly coming from KCCA. It was also reported that the department of the Solid waste was currently occupied by an Acting Solid Waste Engineer who had only been in office for three months with out an office and staff to under take his duties.

5.5.2 Roles and responsibilities

Until 1999, the Kampala City Council was solely responsible for solid waste management under the City Engineer and Surveyor's department, this responsibility was transferred to the Public Health Department, as refuse collection was associated with epidemics such as cholera that had become rampant¹⁵

Currently at the division (now municipality under the Kampala Capital City Authority Act 2010), the roles and responsibilities of solid waste management lies in the office of the Town Clerk who is the Principle Accounting Officer at the Division level and responsible for the day today running of the Division among which is solid waste management, the Solid Waste Engineer responsible for the collection, transportation and disposal of solid waste, the Health Inspector responsible for maintaining the division in a healthy environment free from garbage which is one of the public health hazards, the Finance Officer responsible for executing the logistics for solid waste management in the division.

However, the duties of these officers responsible for solid waste management were currently distorted and temporary being ran pending the restructure of the leadership at the division/municipality level with the introduction of the Kampala Capacity City Authority early this year. This has greatly

¹⁵ Kampala City Council, 2006 Strategy for improving the Management of Solid waste

hampered the management of solid waste in the division. For example most of the tasks for solid waste management were being managed at the Center (KCCA) as opposed to the Division having its autonomy to undertake such activities.

5.5.3 Collection of solid waste

Collection arrangements

Section IV (2) of the Kampala City Council (Solid Waste Management) Ordinance 2000 places the responsibility of collection of solid waste in the hands of Council in this case the division, either by its agents, servants or licensed collectors to ensure that solid waste is collected and conveyed to treatment installations (sites/centers) or approved disposal sites to the extent required to satisfy both public health and environmental conservation requirements.

However, there were four arrangements under which solid waste was collected in Bwaise II some of which were illegal.

- a) The Council in some areas which were accessible, the local community placed their solid waste in non gazetted places like the roadsides, convenient road reserves where the council trucks collected solid waste for final disposal at the land fill in Kitezi.
- b) In areas where the Council trucks could not access, there were private arrangements some known to the Council (Private collectors who are registered like Hill top, urban cleaners and Youth United) collected solid waste at a fee and deposited at the landfill some times and other times to council collection points for final disposal.
- c) Another group of collectors were the illegal and non licensed collectors most times Young boys with wheelbarrows, bicycles and others using their heads who collect solid waste from households at a fee and deposit either illegally in the drainage channels, council collection points and sometimes non gazetted places. These groups also included mentally disturbed people who may not easily be brought to account.
- d) Self loading strategy was another approach employed by the division authority in collection of garbage. By self loading the local community occasionally are encouraged to load their garbage on the council trucks on designated days and the truck finally dump the solid waste to the final place of disposal.

Frequency of collection

The same ordinance under section IV (7) stipulates that the frequency of collection of solid waste shall be in accordance with the regulations of the collection agency but shall be regular enough (at least once a week) not to cause a public health nuisance. The study however found that prescribed frequency of collection of solid waste was only maintained in very few places (road sides) due to both logistical like trucks and fuel which were overwhelmed by the amount solid waste generated. The lack of consistence in some places has created permanent illegal dumpsites and accumulation of garbage which has become a public health concern. Respondents in the focus groups reported that some places go up to a month without seeing a council truck while in other places the council trucks have never been there at all due to poor road connection.

Collection fees

The Council is also empowered to prescribe fees for the collection and final disposal of solid waste by the council under section IV (4) of SWM ordinance of 2000. However findings from the study show that the Council did not provide guidelines on the amount of fees to be collected for which quantity of solid waste generated. Respondents reported that the amount of fees charged was at the discretion of the private waste collectors depending on the amount and unreceipted in most cases. Generally the licensed private collectors charged between 1,000 shillings to 3,000 shillings which is quite exorbitant for the urban poor while the illegal collectors charged very low fees (between 200 shillings to 1,000 shillings) for collection and they eventually dumped solid waste indiscriminately.

5.5.4 Solid waste disposal

According to Section III (4) of the SWM Ordinance of 2000, The responsible person at any dwelling unit (home), industrial or institutional establishment (premises) or ground within the corporate limits (center) of the city where solid waste accumulates shall ensure that solid waste is placed in a container prescribed and approved by the Council, depending upon the type of collection service provided. Section VI(3) states that a holder of a permit shall dispose off all solid waste in accordance with the method approved by the council and at an approved site and approval must be obtained in advance (before)

the commencement of the operations and before any change of method of disposal or site.

All solid waste collected by the authority in Bwaise II is dumped at the gazetted landfill at Kitezi plus some of that that is collected by the private collectors. However much of the solid waste collected by the illegal and unlicensed collectors and some poor informal households dump their garbage in ungazetted places like the roadsides, illegally constituted dumpsites and the drainage channels when it rains due to the costs involved in waste management. It was also reported that Kiteezi is located about 14 kilometers from Kawempe and for each truck that dumps solid waste is charged a fee of 10,000/= Ugandan shillings per trip. This cost in addition to the surging fuel costs, the private collectors are some times forced to dump in areas where KCCA can then collect the waste for final destination which contravenes the management arrangement.

At household level, solid waste is collected and contained in ungazetted containers such as sacks, polythene bags and cut jerricans and dumped illegally most especially in informal settlements of

Jambula Zone, Nabukalu and Mugowa. Parents are also reported to give their children sacks of garbage which they deposit at dumpsites and some times in the middle of the road. This is done mainly at night when the authorities are not watching.

5.5.5 Transportation of solid waste

It is an offence under section V (4) of the SWM ordinance of 2000 for any person to haul (transport) or cause to be hauled (transported) on or along any public street, right of way or alley (passage) in the city, any solid waste, unless that waste is in a vehicle or receptacle (container) so constructed or covered as to prevent the contents from falling, leaking or spilling and to prevent any obnoxious (unpleasant) odor escaping from waste. It is also an offence under section 20 (d & e) of the SWM Ordinance, 2000 to collect, transport, remove or dispose refuse for a fee or other consideration without a valid permit from the Council.

It was observed that Kawempe division had a fleet of trucks designed to collect and transport solid waste in the study area. In total the division had six (6) box body trucks and five (5) tipper trucks



to transport solid waste in the whole division. However by the time of the study only three (03) box body trucks which are specifically designed for solid waste transportation were operational and none of the tippers though not appropriate in transportation of garbage was operational due to mechanical problems. By implication, out of the 17 trucks need to effectively manage solid waste in the division only three are available which brings the collection efficiency of solid waste to around 10% of the total division and only about 30% of Bwaise II parish.

None of the private collectors (registered or illegal) had prescribed transport mechanisms of transportation of solid waste where majority of them were using open trucks, bicycles and others carried solid waste on wheelbarrows. These transportation mechanisms contravene the ordinance on which solid waste management is governed in the area.

5.5.6 Community awareness about solid waste

According to the Solid Waste Management Strategy (SWMS) of 2006 Para.7, members of the public are supposed to be educated in matters of waste management such as; sorting/separation of waste according to their categories of organic and inorganic, efficient use of skips, waste recycling, home composting, waste minimization and adherence to waste management laws.

It was observed in some community places that an effort towards sensitization and awareness of the local community about solid waste management was under taken in Bwaise II parish. Among the common awareness creation methods were posters pinned in both local languages (Luganda and English) instructing people to keep their environment clean. These posters were mainly produced in partnership with NGOs and other development partners. Key among those included WaterAid Uganda, KIEMP, AMREF and Plan International.

The respondents also reported that, several attempts had been made by the CSOs working in the area towards proper solid waste management approaches through community sensitization meetings, building of community structures, establishment of garbage recycling plants and garbage reuse mechanisms in the area. Key among the development partners in solid waste management and community awareness approaches

included SSWARS in partnership with WaterAid Uganda which established a garbage recycling centre in Nabukalu zone dealing in waste reduction through making of composite manure, making of briquettes for cooking, crafts and jewelry among others though the initiative has since died out since SSWARS withdrawal and the centre is now deserted and converted into an accommodation for some poor residents in the study area. Others included Community Integrated Development Initiatives (CIDI) for establishment of community solid waste management structures, Plan Uganda and AMREF who have been supporting community awareness campaigns and capacity building initiatives.

5.5.7 Enforcement of the by laws/ ordinances

According to section 20 (d) of the Solid Waste Management ordinance, 2000, it is an offence for a person to scatter or litter solid waste at any private or public property. Section 5 (1) of the ordinance also prohibits depositing of waste on private property, public street, roadside, or in a ditch, river, stream, lake, pond, channel or in a park, excavation or any other place where it may be or become a public health nuisance. Section 39 of the ordinance also imposes a fine not exceeding two currency points or imprisonment not exceeding six months for a person who commits an offence under the ordinance.

In an attempt to enforce the solid waste management ordinances, the division through the law enforcement arm is responsible for bringing all individuals who contravene the ordinance to book however due to man power limitations, majority of the offenders go unpunished. Cases in point are the landlord who set up dwelling places without solid waste management mechanisms and options. This has further aggravated the problem of solid waste in the area. Other attempts by the division to curb indiscriminate dumping of solid waste are erecting of warning notices (“No Dumping sign posts”) with a fine if the ordinance is contravened but these are subsequently abused since there is no body to enforce the notice.



5.6 Income generation opportunities

In order for community-based waste management to be a success, it must address more than the need for improved environmental management. It must also provide opportunities for income generation and the development of strong community bonds. In Bwaise II together with the support provided by NGOS such as SSWARS in collaboration with WaterAid Uganda, a number of income generating activity initiatives were being practiced by the local community on a small scale while others were solely individual efforts without any kind of support. Among them included making of briquettes from waste, art and craft, artisan and metal works, collection and transportation of solid waste and lastly waste picking and collection.

5.6.1 Manufacturing of briquettes

This initiative was initially started by SSWARS in collaboration with WaterAid Uganda to support local communities with income generation activities as well as management of solid waste generated. The project started in 2008 with SSWARS building the capacity of local communities in waste recycling and established working groups who were later

supported with tools to make briquettes for money. Briquettes are made from waste products like charcoal ash, banana peeling which are some of major biodegradable waste generated in the study area which is mixed with water, squeezed using a machine to make a certain shape and latter dried before they can be used for cooking.

Currently five pieces of briquettes go for an average of 1,000-2,000 shillings and are believed to reduce the amount of charcoal used in cooking by around 60%. By implication reducing the amount solid waste generated in the area, extending the life span of the landfill and subsequently protecting the environment. However this initiative has subsequently died out with only one group found in Tebyoreka zone under the leadership of the area councilor was still manufacturing briquettes for household use due to limited marketability of the products. It was also noticed that since SSWARS withdrawal from the community, the recycling centre which was established has collapsed with no activity taking place.

5.6.2 Art and craft

This was another income generating activity that was visible though to a small extent by household



women organized in groups. One group in particular known by the names of Mazima Women's group in Mukalazi zone was supported by AMEREF who built the capacity of 45 women in different enterprises such as production of mats, bags, belts, shoes, necklaces and baskets out of drinking straws.

The women reported to have collected the straws as waste products for weaving of these different crafts for sale. Averagely, a mat costs between 20,000-40,000 shillings, a bag costs between 15,000-20,000 shillings, a necklace between 10,000-15,000 shillings and belts are costed at around 5,000-10,000 shillings. However the group also reported lack of market for their produce and escalating costs for finishing which have greatly affected their production capacity.

5.6.3 Artisan and metal works

As the saying goes, “one man's waste is another man's gold”. This saying is true to some Bwaise II urban poor residents. A number of artisan and metal works workshops were found in Bwaise II especially along the road that connects to the Division offices from Mugowa zone. Visible were men mending some metallic scrap waste into useful products like charcoal stoves, students suitcases, rain harvesting

gullies and gutters to mention but a few. Another element of the artisan and metal works was the extension of the life span of some household items like saucepans and kettles which were leaking by putting new patches. Interaction with the artisans and metal workers revealed that finished products like a charcoal stove costs between 10,000-40,000 shillings depending on the size and the suit cases costed around 30,000-60,000 shillings depending on the season. However their biggest undoing was limited capital and market for their finished products.

5.6.4 Waste collection, transportation and disposal

Since 2006, Kampala City Council opened up the responsibility of solid waste management in the City which saw the introduction of private waste collectors to supplement the council's efforts. The privatization of solid waste management in the city also introduced collection fees. By the time of the study, it was reported that there three private waste collection companies which included, Hilltop, Urban cleaners and BIN IT operating in the more affluent zones of Tebyoreka, Mukalazi and Mugowa supplementing councils efforts most especially in fenced households.



However there were no registered private collection companies in the low income informal settlements zones of Katale, Jambula and Lufula and Nakamiro as well as Nabukalu. The arrangement in these zones was though illegal and less organized groups or individual, the so called private collectors included, community organized groups like Youth United using wheelbarrows and bicycles, individuals who are paid an average of 500 shillings by the generator of garbage to dispose off garbage on their behalf. Important to note however from this group is that they disposed off garbage in ungazetted place unlike the registered private companies.

5.6.5 Waste picking and collection

This took the form of venturing into garbage pits, households and drainage channels to collect valuable waste ranging from plastic and metal which is sold at the different collection centers for recycling purposes. Another waste picking and collection initiative as an income generating venture was collection of banana peelings for animal feeds from both households and dumpsites. This was the most common practice across the zones. Waste

pickers through an informal arrangement ventured into households with sacks, talked to the residents to dump all their food peeling in those sacks which they collected periodically for sale to daily clients who have animals. It was reported that a sack of around 50 kilograms is sold at an average of 2,000-5,000 shillings and the market was readily available at the various collection centers. While the plastic bottles costed between 200-500 shillings per kilo and steel went for 300 shillings a kilo and aluminum was the most expensive at 500 shillings from the collection center in Jambula zone.

These findings suggest that there is a great potential which is untapped in Bwaise II regarding solid waste as an income generating venture. However there is need to support the local community with both capacity building in business management, working capital, marketing for their products and the division authorities also need to recognize these ventures as not only business opportunities for the local people but also as a waste reduction strategy to get rid of solid waste in the community.



5.7 Feasibility of establishing and designing of a self sustaining low cost plastic waste collection centre in Bwaise II:

Economic growth changing consumption and production patterns are resulting into rapid increase in generation of waste plastics in Bwaise II. Due to the increase in generation, waste plastics are becoming a major stream in solid waste. After biodegradable waste and Kavera waste, plastic waste is the third major constitute solid waste in Bwaise II due to increased use of plastic packaging, plastic shopping bags, PET bottles and other goods/appliances using plastic as the major component.

This increase has turned into a major challenge for local authorities responsible for solid waste management and sanitation. Due to lack of integrated solid waste management, most of the plastic waste is neither collected properly nor disposed of in appropriate manner to avoid its negative impacts on environment and public health and waste plastics are causing littering and choking of sewerage system.

The extremely long periods required for natural decomposition, plastic is often the most common component in waste dumpsites. Plastic recycling can provide an opportunity to collect and dispose of plastic in the most environmental friendly way and it can be converted into a resource. However, the feasibility of establishing a plastic collection centre in Bwaise II was unknown. The assessment of the plastic collection center feasibility was guided by dimensions of business viability framework by Thompson (2003) looking at the market viability, technical viability, management viability, economic and financial viability and lastly the exit strategy viability.

5.7.1 Market viability

Market viability refers to the measurable market demand of the proposed product with in the market. In simple terms it looks at marketing environment in terms of size, sustainability and potential, competitors and pricing. Findings from the study indicated that there is great market potential for all collected plastic materials in the area due to a number of informal plastic waste collections centers where waste plastics are sold for cash who then sale to bigger companies for

recycling like nice house of plastics, Mukwano group of companies to mention. It should however be noted that though a number of collection centers were common in Bwaise II, they decried of limited capital to purchase in bulk all the plastics that is generated from the area. Hence presenting an opportunity for another player with more capital to purchase from individual waste collectors and also other small scale waste collection centers.

5.7.2 Technical viability

This looked at the availability of technical capacity to manage the business, availability of raw materials, supply chain implication and manufacturing processes. Going by this definition, raw materials in this case would mean the empty plastic bottles, their mode of disposal and the quantity that is generated to sustain the collection centre. Data from solid waste study estimates indicated that plastics were the third (4%) most waste generated in the area after biodegradable and polythene. These findings also suggest that the lower percentage of plastics at household level and dumping sites is a function of the economic value that is attached to. These findings suggest that even the little percentage of plastics that is dumped at the dumpsites would be collected for sale if a collection centre was located in the area.

5.7.3 Management viability

Management viability refers to ability to delegate management responsibilities to other staff, availability of competent people to run the business and a stable management structure in place for effective business management. The study found previous attempts to establish a solid waste management centre in Bwaise II which collapsed due to limited funding and limited capacity of staff to handle the centre. However the presence of private waste collectors without support from an external sources presents an opportunity and vivid evidence that the population has grown in plastic collection and business management potentials.

Beside the inherent capacity of the local people, the SWM plan is also proposing to build the capacity of the local people in business management which will further boost the establishment of the plastic collection centre in the area.

5.7.4 Economic and financial viability

Economic and financial viability looked at the

start up cost need to start up the collection center, working capital, cost of raw materials and operational costs that would be needed to under take the plastic collection centre. Building from previous efforts for sustainability and cost effectiveness, the proposed center would **be located appropriately at the previous venue of the waste collection center** for two reason, one people are still aware that the center is about waste collection hence those selling their plastics will easily find it as opposed to anew location. Two, this would reduce the operational cost since the structures say for storage are available at very low or no costs at all since it was a community donation which is now none utilized .

The cost of the raw materials in this case plastics and their transport arrangements were found to be very manageable and subsequently low which would require a small amount of capital investment to acquire almost free products from the dumping sites most especially plastics that are dumped indiscriminately. Considering the transport arrangements, in plastic collection the burden of transporting the items is borne by the seller which further reduces the cost of doing business. Hence a very viable business option to invest in.

5.7.5 Exist strategy viability

The SWM study learnt that the earlier established community solid waste management centre collapsed due to poor exist strategy and lack of sustainable community management structures.

The study learnt that the center depended on donor funding with no income generation mechanism to meet its operational cost. Therefore the business model entrenched in plastic collection center being proposed is sustainability force to reckon with even after the end of the project. The Bwaise II SWM plan also proposed capacity building in business management and linkages of the local community waste collectors to markets, formation of marketing groups and securing support from the division and recognition as a solid waste management strategy not as business. This arrangement also presents fertile ground for sustainability of the plastic collection center in Bwaise II if established.

Findings from this study only suggest an 80% feasibility of establishing a plastic collection centre in Bwaise II. However the success and suitability of the collection center will heavily depend on the management arrangements and capacity building elements that will be implemented by the project.

5.7.6 Design of the Waste Plastic collection center

The design of the centre has been done to the scale of the plot available with special eruptions on the key components that would support the center to function effectively.

The plan presented shows can outlay of the physical structure with different elevations of the center. However detailed design inclusive of the bills of quantities can be done by a structural engineer.



5.8 Challenges and constraints of garbage management

Solid waste management is one of the serious problems in Kawempe division and Kampala district as a whole that has undermined the council's capacity for proper management and efficient disposal. Kawempe like other division / municipalities in Kampala in general enjoyed the urban administration monopolistic statutory requirement of collection, storage and disposal of waste until of recent in 2006 when some private waste collectors were brought on board. However a number of challenges in management of solid waste have remained and these challenges can be grouped into institutional challenges, social economic, infrastructural and legal challenges.

5.8.1 Institutional challenges

Limited capacity of the council to handle solid waste

Bwaise II generates an estimated 31.423 tones of garbage daily with a composition Biodegradable¹² (76%), Plastics¹³ (4%), Metal¹⁴ (3%), Polythene¹⁵ (8%) and others¹⁶ (9%). The average per capita solid waste generation rate is 1.284-kg/per person/per day with a high organic content and bulky density.

Solid waste management is a responsibility of the council according to the SWM ordinance of 2000. This requirement needs Kawempe Division to at least have on average 22- ten (10) tonnage Lorries disregarding the private sector contribution to be able to collect and transport garbage from the whole municipality to achieve 100% performance, on the assumption that each vehicle makes 3 trips per day. However, we noted that the division operated on an average of 5-five tonnage Lorries which was 30% of the fleet required to enable prompt waste collections and disposal in the division and Bwaise II parish. This was due to poor maintenance and operation of the trucks that have lead to many of the allocated trucks to be grounded.

Besides, the vehicle fleet used in management of solid waste. The study also acknowledged that the department of solid waste was understaffed. On average according to the Acting Solid Waste Engineer, the division needed over 250 workers to efficiently collect, enforce, supervise and dispose off solid waste but only 64 staff was available by

the time of the study and this number was also shared with other divisions some of which were temporary staff. This limited capacity to manage solid waste in Bwaise II has resulted into many people using unconventional methods of disposal which include pits within the backyards where it is regularly burnt, collect them in polythene bags and dumping them in streams, road sides and water drainage channels which leads to blocking of water drainage channels and streams and subsequently causing flooding in the low lying areas during the rainy season unpleasant odors.

5.8.2 Infrastructural challenges

Collection and transportation operations from informal settlements like Bwaise II especially in Nabukalu, Jambula, Katale and Nakamiro zones constitute the largest infrastructural challenge in solid waste management. Many poor informal settlements are not easily reached by both the division and the private collectors due to the poor road network. Also the landlords have not been sensitized on the need to manage solid waste and have from time and again put up structures without solid waste management places due to limited land. This has therefore led to several unofficial dumping sites in and around the area mostly located in wetlands, abandoned building and the road sides.

5.8.3 Social economic challenges

Realizing the daunting challenge of keeping the City free of accumulating rotting garbage, KCC embarked on a policy reform to revise the solid waste management ordinances. In 2006 the private sector got involved in collection and transportation of wastes to the landfill⁸. In the initial stages of implementation, KCC subsidized for residents of low income settlements to allow payment of 500/= per emptying for a household based on door-to-door services. To date however, private operators are charging a fee between 500 and 3,000/= depending on the amount of solid waste generated per trip which fee is too high for the urban poor residents in Bwaise II. These fees have subsequently resulted into indiscriminate dumping most especially at night when the urban authorities are not watching.

Another major problem in waste management is the absence of the culture of sorting waste, by type at generation points in this case households, commercial centers and institutions. This result

in mixing of biodegradable wastes with plastics and other environmental contaminant materials, which are all later, disposed of in the same land fill. The public has not taken much positive steps in solid waste management practices like source reduction, re-using, recycling or properly disposing of the portion that cannot be reclaimed. Instead the public has for the most part maintained an **“I don’t care”** attitude of generating as much garbage as possible unconscious of the implications for its collection and disposal. This is also attributed to low awareness and sensitization of the community in the informal settlements.

5.8.4 Legal challenges

Section IV (2) of the Kampala City Council (Solid Waste Management) Ordinance 2000 places the responsibility of collection of solid waste in the hands of Council in this case the division, either by its agents, servants or licensed collectors to ensure that solid waste is collected and conveyed to treatment installations (sites/centers) or approved disposal sites to the extent required to satisfy both public health and environmental conservation requirements.

This ordinance depicts a scenario where the polluter transfers the burden of disposal to the municipality. Thus any additional effort to manage wastes would be transferred to the city authority leading to unscrupulous dumping, civic outcry for services and sometimes nonpayment of municipal dues. This has for a longtime inculcated in public an attitude that the responsibility for solid waste management rests with the city authority. Disentangling this premise is one such target of privatization but it will take time before the ‘polluter pays’ principle is fully embraced by the public due to high level of poverty among the urban poor.

Coupled with the above, the council lacks the ability to enforce the provisions of the ordinance and in some instances the penalty of the offences related to solid waste is too weak to deter any body willing to commit the offence. The continued lack of a deliberate policy to include environmental education both in the school curriculum and outside the formal education system; has made solid waste (garbage) to stand out as one of the greatest challenge in the division which requires urgent attention.

TOKIRIZIBWA
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KA SASILO FINE

5.9 Proposed Strategies for solid waste management in Bwaise II

The problem of solid waste in Bwaise II arises from a lack of recourse to adequate public services that allow for appropriate waste removal, poor infrastructure, legal and institutional challenges coupled with social and economic challenges leading to haphazard and inappropriate disposal methods, such as the dumping of waste in public places, drainage channels and the road reserves. Indiscriminate disposal of solid waste in Bwaise II is widely spread and the extent of the problem now requires the direct intervention of both the Division/Municipality in collaboration with the Civil society and the community themselves. This section therefore presents some of the strategies that can be employed to manage solid waste in the area in both short and longer terms.

5.9.1 Short term strategies:

Under take community clean up exercises:

The solid waste study has established that on average the parish generates about 31 tones of solid waste daily and the division's effectiveness can only collect and disposes of only 30% of this waste leading to heavy accumulation of solid waste in the area. It is therefore commended that the local leadership in partnership with civil society undertake community cleanup exercises to reduce on the amount of solid waste accumulated in the area. This can be done on monthly basis where a day can be set aside with the division providing transport and the community to load and clean up the illegally established dumpsites in the area.

Undertake community sensitization and awareness campaigns:

The community of Bwaise II was found to have an "I don't care attitude" and limited knowledge about solid waste management which have lead to huge accumulation of solid waste in the area. The division which is also responsible for filing this gap was also limited in capacity to under take these roles. Hence in order to immediately reduce the amount of solid waste and improve on solid waste management practices, there is need to under take community sensitization and capacity building on proper solid waste management. This can be done through radio programmes, development and distribution of IEC materials and also undertaking

community sensitization meetings about solid waste management in the area.

Undertake solid waste reuse mechanisms

Bwaise II Parish has a number of informal reuse initiatives, which keep a large variety of solid waste materials in circulation other than final disposal. The Bwaise II informal community demonstrates a genuine commitment to gaining the maximum life from all materials through active solid waste reuse mechanisms however these reuse mechanisms weren't acknowledged and supported by the city authority as a solid waste reduction and management option in Bwaise II and the whole Division.

In respect to the informal reuse mechanism, the best known approaches were the collection of metal scrap in form of aluminum, steel and plastics including PET bottles. Waste pickers were seen venturing into households and dumpsites with a weighing scale to collect such waste for cash. A number of collection stores were established in informal structures where it was weighted and paid after which they would also sale to middle men who finally sale to the recycling companies like Steel and Tube Industries, Roofings Uganda Limited for metal scrap and Nice house of plastics, poly fibers and Crest tanks for plastic materials while others sold to artisans to make other finished products like students suitcases, charcoal stoves, metal works to mention but a few.

On average a kilo of steel metal scrap went for between 200 shillings-400 hundred shillings; plastic was around 50 shillings to 200 shillings a kilo, while aluminum was the most expensive going for around 500-700 shillings. However small scale informal dealers decried of exploitation and lack of capital to buy in bulk and sell to recycling plants into new high vale products.

Drinking straws for art and crafts, Banana peelings for animal feeds and briquettes provide another classical example of solid waste re-use imitative in the Bwaise II community as an attempt to reduce on the volume of solid waste. Notable among the local community are small scale initiatives to reuse solid waste into valuable items for another use. Hence generally reducing the amount of waste generated in the community. However these initiatives were on small scale and majority of which lacked market from with in the community though feasible due to

the available of raw materials in form of garbage, and the high level of unemployed majority of the community can actively engage in such activities.

It should be noted however, for such an initiative to be effective, there is need to: a) Recognize the initiative as a formal waste reduction strategy by the City Authority, b) Organize the local community into groups based on enterprise (scrap, plastics, art and craft), c) Build the capacity of the community (in value addition, collection of sold waste and business skill), d) Support the community with working capital to collect and purchase the waste in bulk and e) Provide market information and linkages where such collected materials and finished products can be sold for money.

5.9.2 Long term strategies

Waste Avoidance

Generally in Bwaise II, there is no sound level of awareness about the need to avoid generating unnecessary solid waste. This lack of awareness always lead to unnecessary waste creation and generation, as there are often limited choices of recyclable packaging at local retail and wholesale outlets.

Most times the actual operation of the business (shops and kiosks) was observed crating unnecessary waste due to the way they conducted their business. A case in point was the generation of plastic water bottles and polythene bags which were among the most garbage generated in the area and founds its way in the drainage channels. Kavera (polythene bags) and plastic bottles were the most solid waste generated by shops and kiosks in Bwaise II mainly used to pack items like juice, water and other merchandises. The practice was observed that the consumers deposited the Kavera and the plastic bottles indiscriminately after use which leads to waste generation. Often this is symptomatic of failing to incorporate waste avoidance principles into production planning processes through a lack of in-house expertise or a commitment to waste avoidance principles.

As an example of practical waste avoidance to reduce the amount of plastic bottles and Kavera dumped indiscriminately in Bwaise II is to introduce a deposit service fee in order to reduce the amount of plastic bottles and Kavera dumped. Practically the business owners/producers would be encouraged

to integrate a deposit on the container. I.e. sale of juice, water and other merchandise is done and packed in returnable cups/bags where a fee as an incentive is placed on returning the cup/bag to the seller. This can be done in such a way that these cups/bags can be returned any time and any where for a full refund, ensuring a service of maximum convenience to users. This can greatly reduce the amount of solid waste generated most especially from business enterprises.

Levying and collection solid waste fees on solid waste generators

The collection, transportation and disposal of garbage are the responsibility of Kampala City Council (KCC) and its divisions according to section 17 of the KCC Solid Waste Management Ordinance, 2000. KCC is required through its agents, servants or licensed collectors to ensure that solid waste (Garbage) is collected and conveyed to treatment installations or approved disposal sites to the extent required to satisfy both public health and environmental conservation requirements.

According section II (1) of the SWM Ordinance of 2000, every owner or occupant of dwelling or commercial premises is responsible for waste generated at those premises until it is collected by council, its appointed agents or operator licensed by the council. The same ordinance under Section IV(4) empowers the council to levy, collect fees for the collection and final disposal of solid waste to be payable by the person generating the waste at a specific period in line with the collection, storage and disposal.

Information from this study shows the willingness of the local community both in very informal settlement and a more affluent section to pay for solid waste. Evidence shows that the affluent zones of Mugowa, Tebyoreka and Mukalazi, some households paid between 1,000 and 3,000 shillings to private collectors to collect, transport and dispose of solid waste. Respondents from the very informal settlements, of Lufula, Katale, Nakamiro, Nabukalu and Jambula zones though through informal arrangements, paid at least between 200 and 500 shillings to informal collectors like lunatics, wheelbarrow boys to collect, transport and dispose off garbage illegally. This information shows the willingness for the local community to pay for solid waste generated.

Another compelling fact about solid waste management is the inefficiency of the division to manage solid waste due to financial challenges arising from limited financial support and collection from the local people to pay for their garbage. True also is the fact that the private collectors don't remit any money to the council yet this being a business venture. Landlords of most informal settlement houses also don't provide for solid waste management facilities for their tenants. All these coupled with other challenges leading to uncontrolled waste in the parish

This study however proposes a new fee collection arrangement where, through the council, a levy similar to local service tax¹⁶ to be levied and collected by the Landlord as part of their monthly rental fees and remitted to the council for garbage collection. This levy will save the council three important challenges a) lack of sufficient resources to collect, transport and dispose off solid from the informal settlements b) the council will effectively collect the levy from Landlords who don't provide for solid waste management and c) when the fee is used to sub-contract local private

collectors to collect solid waste where council can not reach, the council will be able to tax the private collectors for the service.

Another alternative collection arrangement is through the local councils at village or zonal level to collect this fee on behalf of the council due to their knowledge of the local community landlords which information council tax collectors may not have. This arrangement will also empower local communities to hold the council accountable for the uncollected solid waste from their dwellings.

Practically, owing to the fact that each resident has to pay rent and generates solid waste, all generators of solid waste will be able to pay for their solid waste and this money will be used to collect, transport and dispose off waste through public private arrangements where council can not effectively cover all areas. However special attention should be put to a) the amount of levied depending on the amount of solid waste generated, b) community sensitization about this levy and solid waste responsibilities, and c) accountability for the levy collected.

¹⁶ Tax levied on hotel room occupants per night.



6 CONCLUSION, RECOMMENDATIONS AND AREAS OF FUTURE RESEARCH

6.1 Conclusions

- ☛ The collection, transportation and disposal of solid waste in Bwaise II are the responsibility of Kawempe division and its agents or appointed private collectors.
- ☛ The division (Kawempe) is required through its agents, servants or licensed collectors to ensure that solid waste is collected and conveyed to treatment installations or approved disposal sites to the extent required to satisfy both public health and environmental conservation requirements.
- ☛ The responsible person at any dwelling unit (home), industrial or institutional establishment (premises) or ground within the corporate limits (center) of the city where solid waste accumulates is responsible for the solid waste until it is collected by the council.
- ☛ Bwaise II generates an estimated 31.423 tones of garbage daily with a composition Biodegradable (76%), Plastics (4%), Metal (3%), Polythene (8%) and others (9%).
- ☛ The per capita solid waste generation rates is a function of income levels with high-income households (Tebyoreka, Mugowa and Nabukalu zones) generate more wastes than low income households (Jambula, Lufula, Katale zones) but accumulation is higher in low income areas compared to high income settlements due to an availability of waste collection services.
- ☛ Great potential exists income generation which is untapped in Bwaise II regarding solid waste as art and craft, briquette making, artisan and metal works, garbage transportation and waste picking. However there is need to support the local community with both capacity building in business management, working capital, marketing for their products.
- ☛ Recycling and garbage reuse of inorganic materials from solid waste though not well developed in Bwaise II. Such activities are seldom unrecognized, supported, or promoted by the Kawempe urban authority as approaches to support SWM in the area despite having the advantage of: reducing costs of the disposal facilities, prolonging the site span, and also reducing the environmental impact of disposal sites.

6.2 Recommendations

- ☛ There is need to revise the solid waste ordinance of 2000 to include practical elements and arrangements towards imposition of solid waste fees and its collection to effectively manage solid waste in the areas.
- ☛ The Division should carryout massive sensitisation of the local community on proper solid waste management from household level on issues such as solid waste avoidance, shorting, reduction and reuse.
- ☛ The division authority should integrate, recognise and support income generation activities as part of the municipality solid waste management strategy to effectively manage the problem of solid waste in the area.
- ☛ The divisions should operationalize the SWM ordinance including the enforcement of the provisions therein. The public should be sensitized on the provisions in the by-law and the role of the enforcement department in solid waste management.

6.3 Areas for future research

- ☛ A comprehensive study should be under taken to explore the potential of recycling biodegradable waste from informal settlements which constitute the highest percentage of solid waste generated in the urban settlements.
- ☛ A similar study should be undertaken with slightly higher population coverage probably to the whole division to enable the application and generalisation of study findings for better policy recommendation and implementation.
- ☛ A practical arrangement for the urban authorities should be explored for supporting informal settlement solid waste reuse arrangements as a solid waste management strategy for the greater Kampala city.



7 APPENDIX AND ANNEXES

7.1 Annex 1: SWM Plan

Bwaise II Solid Waste Management Operation Plan (2011-2013)

Draft 4th October 2011

1 Introduction and rational for the Plan

Solid Waste (SW) collection is currently one of the most critical services, whose quality and coverage has caused serious public outcry in slum areas¹⁷. Bwaise II generates an estimated 31.423 tones of garbage daily with a composition Biodegradable¹⁷ (76%), Plastics¹⁸ (4%), Metal¹⁹ (3%), Polythene²⁰ (8%) and others²¹ (9%) with an average per capita solid waste generation rate is 1.284-kg/per person/per day with a high organic content and bulky density¹⁸. Kawempe Division acknowledges the fact that its' capacity to manage the waste generated is very minimal due to limited man power, financial challenges and lack of basic equipment used in solid waste management leading to a solid waste collection efficiency of less than 30% of the waste generated².

Community capacity to undertake domestic/household initiatives for solid waste management have also been humped by limited access to land, negative behavioral towards proper solid waste management and limited awareness and enforcement of the solid waste management legal and policy framework among the local community. It is against this background that WaterAid Uganda (WAU) has undertaken a study on solid waste management in Kawempe division which has informed the development of this Solid waste Management Strategy and operation plan to help in the management of solid waste problem in Bwaise II parish, Kawempe municipality/Division.

The proposed strategy is not a monolithic collection and disposal system. Instead, it proposes to employ a multipronged approach that revolves round a ('3R+3') participatory principle of **Rethink, Reduce, Reuse, Recover, Recycle and Residual waste disposal**. The strategy employs six main elements. They are;

- i) Engaging an affordable mix of appropriate technical and management options to Rethink, Reduce, Reuse, Recover, Recycle and Residual waste disposal.
- ii) Involving all major stakeholders in the implementation
- iii) Promoting Private-Municipal Partnerships
- iv) Strengthening institutional SWM capacity of Bwaise II parish
- v) Influencing Division level policies & program support
- vi) Enforcing laws and policies on solid waste management

2 Scope of the plan

This operational plan has been developed after a solid waste management study conducted by WaterAid Uganda in Bwaise II, Kawempe Division. Recommendation and findings from the study have guided the formulation of this operational plan. The plan has been development in conformity to the legal and policy framework guiding solid waste management in Kampala and Uganda as a whole. The plan covers arrangements that must be undertaken from collection, storage, transportation, recycling and final disposal of household solid waste in Bwaise II. The plan doesn't cover any other waste such as biohazards, human body parts and industrial waste generated from Bwaise II. The plan is also only and only applicable to Bwaise II parish, Kawempe division. However other areas can copy and adopt some or whole of the plan as deemed applicable to their situation.

3 Goals and objectives

The purpose of this plan is to help WaterAid Uganda, Bwaise II local community and other stakeholders in tackling the solid waste management problem.

¹⁷ J B Nyakaana, Geography Department Makerere University: *Population, Urban Development and the Environment in Uganda: The Case of Kampala City and its Environs*, 2009

¹⁸ Dennis Nabembezi/WaterAid Uganda, *Solid waste management study in Bwaise II, Kawempe division*, 2011

The goal is to contribute a hygienic and health environment in Bwaise II parish with a sustainable solid waste management system based on community partnerships, best management practices, and cost effective solutions suited to the unique social and economic situations of the urban poor.

3.1 Objectives of the SWM Plan

- i) To build the capacity of the local communities on best solid waste management practices and enhance positive behavioral change by 2013.
- ii) To support and standardize existing community solid waste management facilities based on sustainable management practices
- iii) To lobby local government to support and integrate local community informal solid waste management enterprises into the municipal solid waste management strategy
- iv) To lobby local government on development and revision of the legal and policy framework for effective solid waste management in Bwaise II by 2013

4 Key Activities:

It is envisaged that a series of activities in a chronological order will be undertaken to operationalize this SWM plan. These activities are here below detailed to guide the implementation of the plan.

4.1 Community Capacity building initiatives

4.1.1 Community awareness and sensitization

A series of community sensitization and awareness campaigns will be undertaken to build the capacity of the local communities on best solid waste management practices. Key practices to be emphasized will include

- a) Waste reduction,
- b) Waste avoidance
- c) Shorting and packaging
- d) Proper disposal of solid waste.

The trainings will focus on all informal residents living in Bwaise II parish through community meetings, sensitization workshops, production and distribution of IECs as well as through radio programs. Landlords will also be targeted in this campaign where they will be sensitized on the need to establish solid waste management structures at household level and awareness of the solid waste management ordinances.

4.1.2 Establishment of community solid waste management structures

To improve on the sustainability of solid waste management initiatives and also monitor the operationalization of this plan, WaterAid through her local partner organization will establish a Solid Waste Management Committee. The committee will be formed of representatives from each zone to undertake the coordination of solid waste management activities like the adherence of the council solid waste collection trucks to the agreed upon roster, mobilization of community members for solid waste activities and get involved in lobby and advocacy activities with the council on solid waste management in Bwaise II.

The number of committee members will be the discretion of the local community with support of the local implementing partner but the following positions are important and inclusion of women in committees. The chairperson, vice chairperson, secretary, Mobilizer and treasurer are some of the positions for consideration.

4.1.3 Capacity building in solid waste management as business and market linkages

The solid waste management study highlighted the business opportunities being undertaken by the urban poor as regards to solid waste management in Bwaise II and their challenges². The study also noted that the community didn't recognize these initiatives as a waste reduction strategy and they were also not

supported by the local authority.

This strategy however would like to revive these initiatives mainly, manufacture of the briquettes, making of crafts, collection of plastics and metal works and banana peelings for animal feeds. The trainings will first focus on business skills such as marketing, record keeping, value addition and bulking and shorting. Other trainings will also include group formation and dynamics and savings and credit.

After building the community's capacity, local community members interested in solid waste business will be organized into groups depending on their enterprises to be supported with working capital to expand their business and linkage to markets through provision of market information, formation of marketing associations and value chain addition.

4.2 Support to community solid waste management initiatives

The solid waste management study highlighted the presence of community solid waste management initiatives which included, informal private collectors organized both as individuals and groups and the established community solid waste recycling centre in the area. However these initiatives were both not recognized and supported by the local authorities as contributing to solid waste management solutions in the area. This plan however seeks to create awareness about the importance of these structures; mobiles support from both the private sector and division and also lobby for their integration into the division solid waste management strategy through.

4.2.1 Supporting the local private collectors with solid waste collection tools

One of the challenges faced by the local community initiatives to solid waste management was lack of tools for both collection and transportation of solid waste from household to solid waste disposal centers. Due to the nature of the road networks in the area, the project proposes to support the local community with wheelbarrows, bicycles, gloves, gumboots, overalls, rakes, hoes, spades and garbage collection cans/bags to effectively collect and transport solid waste most especially in areas which are not easily accessed by the local council solid waste trucks.

The arrangement will be that with minimal working fees being paid by the local community, the solid waste will be able to be collected from the households to places where the city authority can effectively collect for final disposal.

4.2.2 Organize community cleanup exercises.

As an approach to collect and remove all accumulated solid waste in the Bwaise II, a community clean up exercise is proposed on monthly basis. With the help of the solid waste management committees and the tools supplied to the community solid waste management initiatives. The local community will be sensitized about the importance of this exercise and be encouraged to take part in the community cleanup exercise on a monthly basis. The community cleanup exercise will mainly focus on removing accumulated waste in the different zones and also create awareness about the need for proper solid waste management. IEC materials will also be distributed during these exercises to further create awareness. The division authority will be informed about this exercise and their support in terms of provision of solid waste truck to collect and disposes off solid waste will be sought.

4.2.3 Linking the local community solid waste management initiatives to division authority

The solid waste management study found that the local community initiatives to solid waste lacked the capacity to transport their solid waste to the final disposal place in Kiteezi hence supplemented council efforts by collecting solid waste from areas where council trucks could not reach to areas where they would effectively reach. However this contribution was not recognized by the city authority. Hence this plan proposes to formulate a formal working arrangement where gazetted dumping and a solid waste collection roster will be agreed upon with the local council. This will help the informal private collectors to collect and dump the waste where council can collect it for final disposal. This will be done through

collaboration and advocacy efforts between the council and the local community with support of the local implementing partner.

4.2.4 Establishment of a community plastic and metal collection centers

Earlier projects in area had established a community solid waste management centre which collapsed with the withdrawal of the funding and implementing agency. However physical structures remained which provide a good starting point. The center was established on an arrangement with sole financial support from WaterAid Uganda.

This plan proposes to support local private initiatives dealing in collection of plastics and metal with both capacity building and capital to purchase the items from the local community then sell to the collection center who will then sell to the recycling companies. It is envisaged that through a group marketing arrangements where all waste collectors (plastic and metal) their items will get ready market through linkages instead of selling in small quantities to middle men who exploit when it comes to pricing. The small profit margin obtained from the sale of the items to the recycling plant will then ably sustain the centre instead of solely depending on the donor funding which is not likely to be sustainable.

It is however important to note that the amount of plastics and metal generated in Bwaise two is not sufficient to sustainably support the establishment of a plastic recycling plant unless an arrangement from other parishes and Divisions are made to increase the volume.

4.3 Lobby and advocacy activities

The solid waste management study identified challenges in both the legal and policy framework and also solid waste collection arrangements in the council which required serious lobby and advocacy activities. Key among them was:

- a) The weak sanctions put in place by the solid waste ordinances and the strategy for those who fail to comply with the provisions
- b) Limited capacity of the council to effectively enforce the solid waste management ordinance and the strategy
- c) Technical and infrastructural challenges of the council to handle solid waste
- d) Lack of recognition, support and integration of the informal waste reduction strategies into council solid waste management plan to mention.

Therefore this plan proposes to under take dialogue meetings, focused advocacy visits and production of policy briefs to inform council on:

- a) The need to repeal and revise the solid waste ordinance to include tough sanctions and working arrangement for enforcement.
- b) Introduce a solid waste management levy to be paid by every generator of solid waste, collected by all landlords and remitted to council to enable council raise funds to effectively manage solid waste
- c) To support informal solid waste management practices as part of the council solid waste management strategy through provision of working capital on revolving schemes, capacity building and access to council solid waste collection trucks and the land fill.

Other activities will include, policy ad advocacy training for the local community in rooted advocacy, establishment of advocacy structures and holding of community dialogue meetings with all key stake holders to effectively hold council reliable for solid waste management.

It is envisaged that through this strategy at least 70% of solid waste generated in Bwaise II will be effectively collected, transported and deposited through a public private arrangement with the local authorities.

5 Bwaise II Solid Waste Situation Analysis:

Problem	Project goals
<ul style="list-style-type: none"> Low community awareness of proper solid waste management practices resulting in indiscriminate solid waste disposal Negative community attitudes towards proper solid waste management Weak solid waste management policy and legal frame work Lack of institutional and technical capacity to handle solid waste in Bwaise II 	<ul style="list-style-type: none"> To contribute a hygienic and health environment in Bwaise II parish with a sustainable solid waste management system based on community partnerships, best management practices, and cost effective solutions suited to the unique social and economic situations of the urban poor
Project objectives	Project outcomes
<ul style="list-style-type: none"> i) To build the capacity of the local communities on best solid waste management practices and enhance positive behavioral change by 2013. ii) To support and standardize existing community solid waste management facilities based on sustainable management practices iii) To lobby local government to support and integrate local community informal solid waste management enterprises into the municipal solid waste management strategy iv) To lobby local government on development and revision of the legal and policy frame work for effective solid waste management in Bwaise II by 2013 	<ul style="list-style-type: none"> Improved solid management practices of at least 10,000 people in eight zones of Bwaise II Parish Kawempe division by 2013 At least one community solid waste collection centre established and functional by 2013 Community solid waste management initiatives are strengthened, recognized and supported by the Division as complementary solid waste management strategies by 2013 At least some substantial revisions and amendments are made to KCC the solid waste management ordinances (2000) and solid waste management strategy (2006)
Major activities	Major activities
<ul style="list-style-type: none"> i) Inception meetings and project launch ii) Establishment of community Solid waste management committees iii) Community sensitization and awareness creation about proper solid waste management iv) Community training and capacity building in solid waste business management and group dynamics v) Formation of solid waste group enterprises and support vi) Distribution of working tools vii) Organizing community clean up exercises. viii) Establishment of community solid waste collection centre ix) Value addition ,market linkages and support x) Lobby and advocacy activities like, focused visits, dialogue meetings, policy briefing and radio talk shows 	

5.1 Logical Framework Matrix

Narrative summary	Objectively Verifiable Indicators	Means of verification	Assumptions
<p>Objective 1: To build the capacity of the local communities on best solid waste management practices and enhance positive behavioral change by 2013.</p>	<ul style="list-style-type: none"> At least 10,000 people in Bwaise II parish have been sensitized about proper solid waste management practices The attitude of at least 5,000 people in Bwaise II parish have been changed towards proper solid waste management At least one solid waste management structure has been established from zone to the division 	<ul style="list-style-type: none"> Solid waste training manuals List of participants to the trainings Copy of IEC materials and training materials Observations of the sold waste management practices Citizen report cards and surveys Committee members' names and their positions 	<ul style="list-style-type: none"> The local community are willing to take part in the trainings The project funds are available to undertake these activities The political environment remains stable for the successful implementation of the project
Activities	Inputs		
<p>1.1 Project inception meetings</p> <p>1.2 Project Launch</p> <p>1.3 Community training and sensitization on solid waste management</p> <p>1.4 Production and distribution of IEC materials on proper solid waste management</p> <p>1.5 Establishment of community solid waste management committee</p>	<ul style="list-style-type: none"> Funds Community members' time Consultant to develop the IECs Stationary Venue and refreshments 		
Narrative summary	Objectively Verifiable Indicators	Means of verification	Assumptions
<p>Objective2: To support and standardize existing community solid waste management facilities based on sustainable management practices</p>	<ul style="list-style-type: none"> At least 2000 community members are training in solid waste as a business At least five sold waste business enterprises are identified, developed and undertaken by the community members to contribute to both solid waste management and income generation At least 8 solid waste management group enterprises are supported with working capital At least one solid waste collection centre is established and functional At least five enterprise are linked to market sources and provided with regular market information At least 100 hoes, 40 wheelbarrows, 50 spades and 50 rakes are distributed to Bwaise II parish for proper solid waste management in the parish At least 18 (one per month) community clean up exercises at zonal level are organized and undertaken 	<ul style="list-style-type: none"> Solid waste business training manuals List of participants who attended the trainings Names of solid waste management enterprises identified and developed Physical location and presence of the solid waste collection centre Copies of the market information and pricing details for the products Distribution list for the working tools List of participants and community clean up reports and rota. List of sold waste groups receiving the financial support 	<ul style="list-style-type: none"> Local community's willingness to adopt solid waste management business The market is continuously available to support the solid waste products Local community is willing to undertake community clean up exercises The division is willing to support and recognize the informal solid waste operators

Activities	Inputs
<p>2.1 Community training in solid waste as a business, group formation and dynamics</p> <p>2.2 Identification, appraisal and selection of solid waste enterprises</p> <p>2.3 Formation of group enterprises</p> <p>2.4 support the groups with working capital and linkages to both the division and markets with market information</p> <p>2.5 Establishment of the a community solid waste collection centre</p> <p>2.6 Support community solid waste collection initiatives with working tools</p> <p>2.7 Undertake community clean up exercises at zonal level.</p>	<p>Funds</p> <p>Community time to undertake activities</p>
Narrative summary	Objectively Verifiable Indicators
<p>Objective 3: To lobby and influence local government (Division) to recognize, support informal solid waste arrangements and also revise the legal and policy frame for proper solid waste management in the area by 2013.</p>	<ul style="list-style-type: none"> At least 1,000 local community members are trained in lobby, policy and advocacy to influence local government on solid waste management issues At least three policy briefs are produced to influence the division on proper solid waste management especially on levying of fees, increase on the capacity and revision of the solid waste management ordinance and strategy At least six (06) dialogue meetings are undertaken to influence and engage the local government on solid waste management issues At least a formal working arrangement (solid waste collection rota) is agreed between the division and the solid waste management committee. At least two major revision into the solid waste management ordinances and strategy by the division
Means of verification	Assumptions
<ul style="list-style-type: none"> Policy and advocacy training manual and materials List of participants taking part in policy and advocacy trainings Copies of policy briefs produced A copy of the agreed solid waste collection rota in the parish List of participants and minutes to the dialogue meetings Clauses of the revised solid waste management ordinance and strategy 	<ul style="list-style-type: none"> The local government is willing to listen and take action The local community are willing to engage in advocacy and lobby activities The political climate is favorable for the lobby activities
Activities	Inputs
<p>3.1 Community training in policy and advocacy</p> <p>3.2 development of policy briefs</p> <p>3.3 Organizing dialogue meetings</p> <p>3.4 Undertake at community radio programmes</p> <p>3.5 Undertake a consumer satisfaction survey about solid waste management</p>	<p>Funds</p> <p>Community time</p> <p>Consultants</p>

5.2 Monitoring and evaluation plan

A comprehensive monitoring plan is developed for the project which has been structured into key monitoring activities below:

5.2.1 Routine monitoring visits:

WaterAid under her organizational structure, there is a Monitoring and Evaluation officer/Head of Programme Effectiveness who is responsible for tracking project progress at an organizational level. At project level there is a Coordinator for Urban and Small Town under which the project fall. He will be responsible for undertaking monitoring roles at a quarterly basis through routine visits and sharing the progress of the project against the set indicators. Besides the Urban Coordinator, the Consultant in charge of the project will also have some monitoring roles to see the adherence to the plan by the implementing partners. These through their routine monitoring visits to the project area, they will track project progress, value for money, challenges and success as well as offering guidance to the project implementation team. They will also ensure strict observation of the activity plans. This will be a continuous process until the intended outputs are achieved.

5.2.2 Community based monitoring and review meetings

Community based monitoring is an integral part of WaterAid's work and it built on the community structures, such as the community based monitoring teams, policy and advocacy committees and village health teams through their partner organization. Besides the community based monitoring teams and committees, the project has built in the project feed back meeting and dialogue meeting which will also focus on the progress of the project against indicators, success, lessons and failures. These meetings will also be attended by all stake holders in the project to review the project progress and suggest recommendations on the best ways to proceed.

5.2.3 Project evaluations

The project proposes to carryout two evaluation exercises conducted by an independent consultant to measure progress against project proposed goals and objectives, challenges and offer recommendations to the project management team. In the middle of project life span a mid-term evaluation and the second at the end of the project hence the end of the project evaluation will be conducted. The purpose of the mid-term evaluation will be to assess the progress of the project and offer recommendations on the way forward, lessons and challenges faced. The end of the project evaluation will be to asses the performance of the project against the set objectives and goal for which it was formulated.

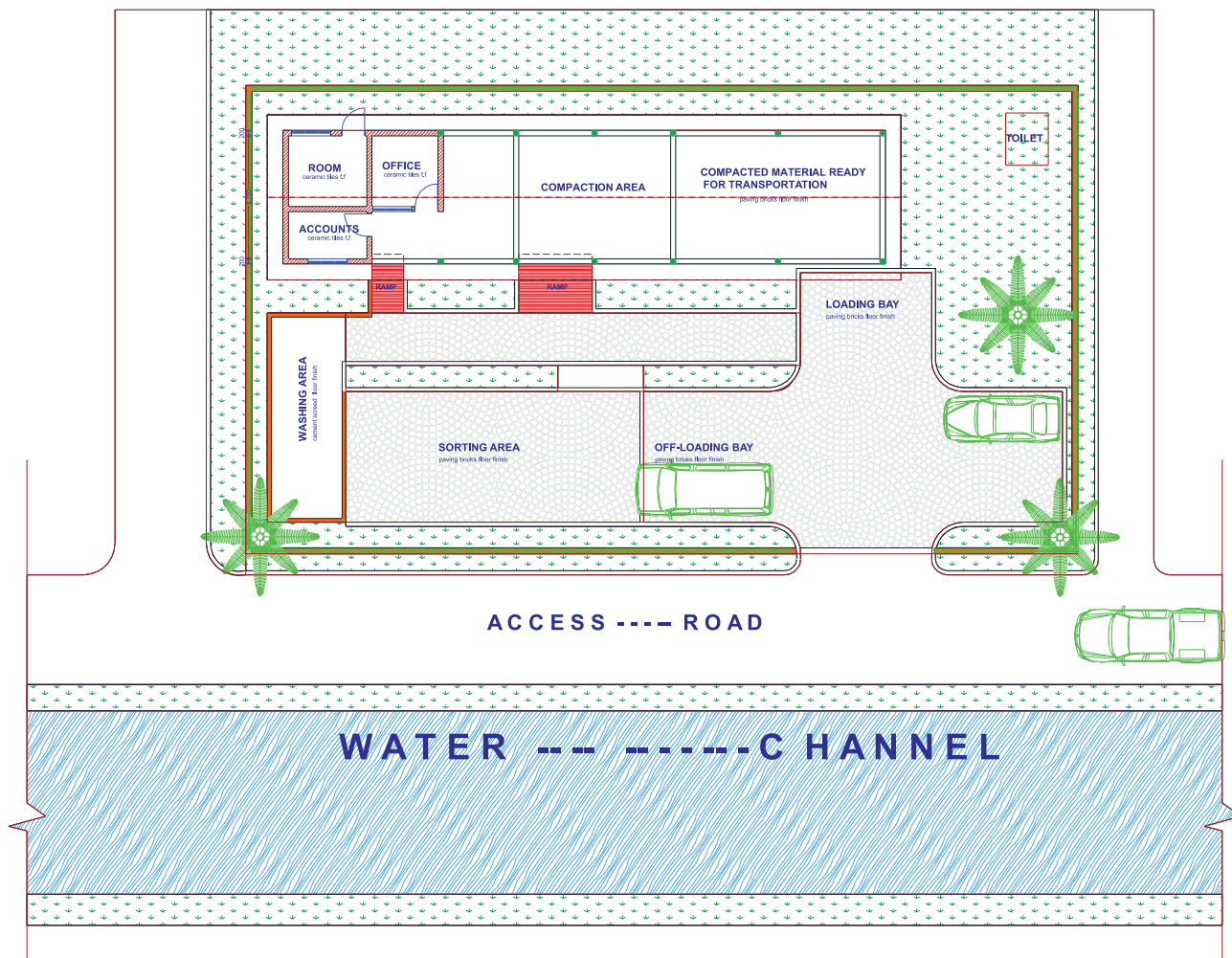
7.2 Annex 2: The Solid Waste Collection Centre Designs

2.1 Elevation



2.2





GROUND FLOOR PLAN (scale 1:100)

7.3 Annex 3: Terms of reference

Terms of Reference for developing a Solid Waste Management Strategy for Kawempe Division and operational plan for Bwaise II parish

1.0 Introduction

1.1 About Water Aid

WaterAid is an International UK-based charity organisation that has been operating in Uganda since 1981 focusing on support to the delivery of safe water and promotion of sanitation and hygiene education poor communities in selected district of North East, Central and Western Uganda. Its service delivery work is based on the concept of district support and is committed to the vision of a World where every one has access to safe water and sanitation. In particular, it works in the districts of Amuria, Katakwi, Napak, Pallisa, Kampala and Masindi. Working towards the above vision, in the Ugandan context, initiatives are promoted through establishment of strategic partnerships, demonstration and scaling up of efforts and investigating obstacles to sustainable safe water, sanitation and hygiene education, including lobbying and advocacy.

Since the early 1980s, WaterAid Uganda (WAU) Country Programme has been designed to respond to the changing social-economic development, sector policy environment and the quest for sustainability. In its new strategic focus for 2006-2011, WAU embraces quality programming, innovation and efficiency that will help the organisation to stand out and demonstrate excellence, good practice and learning.

1.2 Background to the WAU's Urban Programme

The urban water and sanitation sub-sector is relatively new for CSOs in Uganda. WAU's urban programme only began in July 2004 and currently works in Kampala Urban slums in three parishes of Kawempe Division and 5 small Towns of Amuria, Katakwi, Masindi, Pallisa and Napak. The programme involves hygiene promotion, capacity building among the community and partner staff, the provision of water and sanitation infrastructure¹⁹ plus supporting mechanisms for sustainable service delivery.

The programme's main objectives are:

- **To contribute to increasing the water and sanitation coverage in urban poor settlements,**
- **To develop as well as promote approaches that will ensure service sustainability to urban poor communities**

The programme employs participatory approaches through promoting community involvement and management, citizen's empowerment and advocacy for improved service delivery, as well as child involvement through the child to child approach in schools.

The Urban Programme is undergoing an evolution process where strategic focus is increasingly shifting from predominantly outputs to focus more on impact creation and sector influencing. This approach specifically emphasises systemic changes able to improve people's living standards through WASH. The output of this assignment is thus expected to guide WAU urban work in aspects of targeting and approaches. The report should therefore provide information and data for objective decision making in selecting the mode of interventions and the priority needs of the target groups. It will provide recommendations on how to achieve significant positive systemic changes in the next five years.

2.0 The solid waste management problem

In cities of the developing world, problems and issues of Municipal Solid Waste Management (MSWM) are of immediate importance. This has been acknowledged by most governments, however rapid population growth overwhelms the capacity of most Municipal authorities to provide even the most basic services (Zurbrugg, 2000).

¹⁹ Water and sanitation infrastructure refer to water supply schemes, Rain Water Harvesting Systems-ferro c cement tanks, water jars, Water Kiosks, drinking water facilities in schools, Communal toilets, school toilet blocks, waste collection skips, talking compounds with WASH messages

In most developing countries, typically one to two thirds of the solid waste generated is not collected (Zerbock, 2003). As a result, the uncollected waste, which is often also mixed with human and animal excreta is dumped indiscriminately in the streets and in drains, contributing to flooding, breeding of insect and rodent vectors and the spread of diseases such as cholera.

Solid waste management encompasses generation, collection, transportation and disposal of urban waste. Urban authorities have the responsibility to ensure safe, reliable and cost effective removal and disposal of solid waste, which takes up a large proportion of available resources which are not adequate to cope with the magnitude of the problem.(NEMA,2000)

Uganda's rate of urbanization is growing fast. It is estimated that Kampala City Council (KCC) spends United States Dollars 1.53 million per month to remove only 30% of the total waste generated (Ngategize 2000). As amounts of solid waste increase, the cost of its removal increases too. Yet KCC does not have sufficient resources to completely and efficiently carry out this responsibility. The result has been delays in disposing off this garbage.. Also the communities are ignorant of the best way to manage the waste, as there is a little community initiative to undertake collective action. Therefore they are vulnerable to health hazards and environmental negative effects resulting from the delayed removal of solid wastes. Given this situation there is need to promote complimentary alternatives such as community initiatives to manage garbage in a sustainable manner in addition to being a potential source of income for the poor.

This TOR therefore responds to the above need, in trying to design an operational plan for sustainable management of garbage in Bwaise II parish as well as broadly defining an Urban solid waste management strategy will help WAU's urban interventions better target the WASH needs of the poor and other vulnerable groups in Kampala. In addition, it will serve to guide interventions of Kawempe division Local Government in improving service delivery.

It is anticipated that the strategy will provide a spring board for innovation and exploring new approaches and methodologies for working with the urban poor. Working in urban areas demands capacities and skills that are often different to those required for working in rural areas. This work can often uncover issues which WaterAid is not accustomed to and contribute to improve on its contribution to these communities

3.0 Assignment objectives

Overall objective:

The goal of the urban solid waste management strategy is to improve WAU's understanding of the current state of urban solid waste management practices of residents of low income areas of Kawempe Division/ Kampala in Uganda (slum, informal settlements, peri-urban areas).

Operational objective

This assignment is intended to guide implementation of the Bwaise II WASH project, through a detailed analysis of the solid waste management cycle from collection to ultimate disposal. This analysis will guide the formulation of initiatives that promote waste as a source of income, in addition to identifying the potential of establishing a plastic waste collection centre.

Specific objectives:

- (ix) identify the current service status (level) of and the nature of solid waste management services in low income communities (who, where, how, what);
- (x) To establish the nature of the solid waste generated by households in Kawempe Division i.e. biodegradable, plastic and metals etc.
- (xi) Investigate the implementation of service delivery obligations and strategies employed with respect to low income unplanned areas of Kawempe by the Division LG and private operators. This will also include analysis of the provisions in the Kampala solid waste management strategy
- (xii) investigate the income generation opportunities for service providers, including small private sector operators, in the provision of solid waste management services(collection, transport, treatment and

- disposal) that reduce garbage in urban areas and suggest opportunities that can be taken on;
- (xiii) identify the obstacles/barriers (economic, institutional, infrastructural, regulatory) to service delivery in low-income settlements experienced by all identified service operators (small private, CSOs, CBOs etc) and which creates the identified gaps in (iv) above;
- (xiv) Investigate the feasibility of establishing a self sustaining low cost plastic waste collection centre and design the same. It is expected that the consultant will advise the client on possible locations in Bwaise II for this centre.
- (xv) To suggest and evaluate community initiatives of solving the garbage problem in Kawempe Division. Highlight unique baseline conditions in the sample area which could constrain and/ promote the potential for replication and
- (xvi) Identify and suggest possible public policy recommendations, technological innovations, delivery methods and further research (policy and programme delivery) to inform WAU policy and programme intervention in urban areas.

4.0 Scope of the study

The study area is Kawempe Division; however, sample area is all 8 zones of Bwaise II Parish. The consultant is expected to visit each zones in establishing the baseline situation with respect to the specific objectives outlined in section above.

The Process is limited to garbage from households and business enterprises

5.0 Expected Outputs and time frame

Expected Deliverables

- (i) Baseline situation of solid waste management practice in the 8 zones of Bwaise II parish
- (ii) Practical operational plan with specific work tasks for effective waste management in Bwaise II parish based on situation analysis and best operational practice. This should promote community involvement and implementation of different stakeholder mandates
- (iii) Report on feasibility and design of waste collection centres
- (iv) Broad implementable strategy for sustainable waste management in Kawempe division that complies with the KCC SWM strategy. This strategy will highlight the effectiveness of the current waste management policies

The above outputs may be contained in one report but with clear delineation

6.0 Time frame

It is anticipated that this assignment will take a maximum of 4 weeks

7.0 Consultant's qualifications

The consultant's team should have a minimum of 07 years experience in solid waste management initiatives. The consultant should have at least five years experience in working with informal settlements. Desirable academic qualifications are a degree in civil Engineering or environmental engineering or environmental management. Additional qualifications in sanitary engineering or municipal solid waste management are an added advantage.

8.0 The WAU Support Team

WAU has set up a team to support this assignment. The team will comprise of:

Team Leader	Joseph Ssemmanda	SPC- Urban Issues
Supporting Team:	Spera Atuhairwe	HoPE
	Rebecca Alowo K	HoPRC
	Milly Akwi	SPC - Sanitation

The Team will:

1. Over see procurement processes of the consultant
2. Supervise and guide the consultant to ensure quality output
3. Ensure quality control and effective time management
4. Mobilisation of stakeholders to participate as appropriate
5. Seek views from the rest of WAU team to enrich the ideas for the expected output.
6. Circulation of the draft report to the WASH sector for comments
7. Dissemination of findings to the WASH sector

7.4 Annex 4: Data collection tools

Solid Waste Management Strategy for Bwaise II Parish- Kawempe Division: KI guide:

Theme 1: Nature of the solid waste generated

- What are the key major types of garbage generated in your household/premises?

Theme 2: Status and Nature of Solid waste management services:

- What are some of the ways in which garbage is managed in your area?
- Who are the major solid waste management operators in your area?
- Are there some community waste management initiatives undertaken in your area?
- How effective are the garbage management arrangements in your community

Theme 3: Implementation of service delivery obligations and strategies employed

- What is the current arrangement for garbage management in your area?
- Who is responsible for collecting garbage from your household /premises? how many vehicles, function and operational, fuel
- Where is garbage finally deposited when picked from your household/premises?
- How often is garbage collected or taken out of your household/premises?
- Do you pay any money for garbage management?
- If you pay any money how much do you pay for garbage?
- Are you aware of any garbage ordinances in the area?
- What exactly do you know about these ordinances?

Theme 4: Income generation opportunities:

- Does garbage have an economic good for the people in your area?
- What are some of these opportunities?
- What are some of these opportunities can you take advantage of
- What else can you suggest in line with the economic good of garbage in your area?
- If there was an opportunity to establish a garbage collection and recycling centre in your area, where would you put it and why.
- What are some of the facilities or issues you would consider before locating the center

Theme 5: Challenges and constraints for garbage management

- What are some of the challenges for garbage management in your area?, collection, transportation, depositing, enforcing the laws/ordinances and sensitization.
- What can be done to over come some of these challenges in your area?

Theme 5: Recommendations and suggestions:

- What are some of the practical suggestions for better garbage management in your area?
- Suggest ways of strengthening community garbage management initiatives

7.5 Annex 5: List of respondents

Name	Organisation /Designation	Tool Administered
Ssemanda Joseph	Senior Programme Coordinator Urban and Small Towns-WAU	Key Informant Interview
Dembe Simon	Programme Officer - Policy and Advocacy -CIDI	Key Informant Interview
Tebeyungwa Innocent	Acting Solid waste Engineer- Kawempe Division/ Municipality	Key Informant Interview
Okello James	Division Public Health Inspector - Kawempe	Key Informant Interview
Jonathan Nunda	Programme Manager WASH-African Evangelist Enterprises	Key Informant Interview
William Leku	Community Mobilizer -AEE	Key Informant Interview
Sarah Muwonge	Mazima Women's Group-Chair person Mukalazi zone	Key Informant Interview
Mukisa Gorette	Women's group chair person - Tebyoreka Zone	Key Informant Interview
Nuludin Ssentamu	Chair Person LCI Jambula Zone	FGD
Umaru Ndiwalana	Chair Person LCI Mugowa zone	FGD
Ssebwato Godfrey	Chair Person LCI Mukalazi Zone	FGD
Nalubowa mariam	Vice Chair Person Katale Zone	FGD
Masane Falahian	Vice Chair Person Nakamiro Zone	FGD
Namagemebe Aminah	Chair Person Lufula Zone	FGD
Kabiswa margret	Chair Person Nabukalu Zone	FGD
Kiwanuka Scot	Bwaise II Area Division Councillor	FGD

5.6 Annex 6: List of references

- 1) Environmental Resource Limited (ERL), Solid Waste Disposal–Kampala final report, 2009
- 2) Government of Uganda, Local Government Act, 1997
- 3) Government of Uganda, The Constitution of the republic of Uganda 1995, revised 2005
- 4) J B Nyakaana, Geography Department Makerere University: Population, Urban Development and the Environment in Uganda: The Case of Kampala City and its Environs, 2009
- 5) Joshua Zake, Waste Management in Uganda; Issues for Policy and Practice change, Environmental Alert, 2010
- 6) Kampala Solid Waste Management Strategy, December, 2002, as revised in 2006
- 7) Kawempe Division Population Project Report 2010
- 8) MoWE Joint Sector Review Report 2010
- 9) NEMA, (1998), National Environment Management Authority. State of the Environment Report,
- 10) NEMA, (2004), National Environment Management Authority, Draft guidelines for solid waste
- 11) Ngategize, P., Moyoni, Y. (2001). Solid waste management strategic plan for Mpigi district, Uganda
- 12) Nyakaana J. B., Sengendo H., Lwasa H. (2006). Population, urban development and the environment in Uganda; the case of Kampala city and its environs. Makerere University, Faculty of Arts, Kampala, Uganda.
- 13) Public health Act, Cap.281
- 14) Republic of Uganda, Office of the auditor general, Value for money audit report on solid waste management in Kampala city council, 2010
- 15) Tenywa, M, M., Nasinyama, G. and Sengendo, H., (2007). Annual report on waste and Flood
- 16) Management sub component of the Focus City – Building a Sustainable, Cohesive Community through Waste Recycling and Agro-Enterprises. Makerere University, Kampala, Uganda
- 17) United Nations Human Settlements Programme (UN-habitat), Situation analysis of informal settlements in Kampala: Kivulu (Kagugube) and Kinawataka (Mbuya 1) Parishes, 2010.

- i Anything organic that can be broken down by natural biological process and reduced to acceptable levels that have no or little impact on the environment e.g. banana peelings, food leftovers, paper and wood waste products.*
- ii Anything organic that can be broken down by natural biological process and reduced to acceptable levels that have no or little impact on the environment e.g. banana peelings, food leftovers, paper and wood waste products.*
- iii Anything made out of plastic, inclusive of PET water bottles, broken plates, jerrycans, and other plastic materials which could not be easily deposited.*
- iv Included anything metallic such as steel, aluminum and all other kinds of metal in form of scrap*
- v Included Kavera and other forms of synthetic fiber bags*
- vi This included all other categories that could not be categorized earlier, they included, broken clay plates, glass, clothes and any other thing that was found.*

Burning & Composting



Dumping incineration
Abandoned waste Garbage