



Recentralisation Of Performance Of Urban Solid Waste Management Service Delivery In Lubage-Kampala Uganda

Nabukeera Madinah

Kyambogo University

Department of History and Political Science

ABSTRACT

Kampala is a government seat and the capital city of Uganda. Kampala has been referred to as an executive slum due to its breakdown in service delivery. Currently the city is facing increased population growth, increased demand for services, changing consumptions, rising income which has caused urbanization that resulted into increased solid waste generated. While Kampala has a lot of challenges i.e., garbage, potholes, sewer service, construction, traffic management, corruption, health services, environment, stray livestock and management of markets. The main objective of this papers was to investigate service delivery during the recentralization of the city in line with garbage tonnage. Secondary data from Lubaga division used with content analysis to analysis the collected data. Results indicated that a small number of trips and fuel consumption in December compared to October and November 2016. The fall in trend of garbage collected could be as a result of some measures like burning which are adopted by some households in Rubaga division. It is also believed that some KCCA garbage vehicles remain on the road sides and this would make it hard for some people who are far from the road to bring their garbage.

Keywords: Recentralization, performance, Solid waste management, service delivery, KCCA and Uganda.

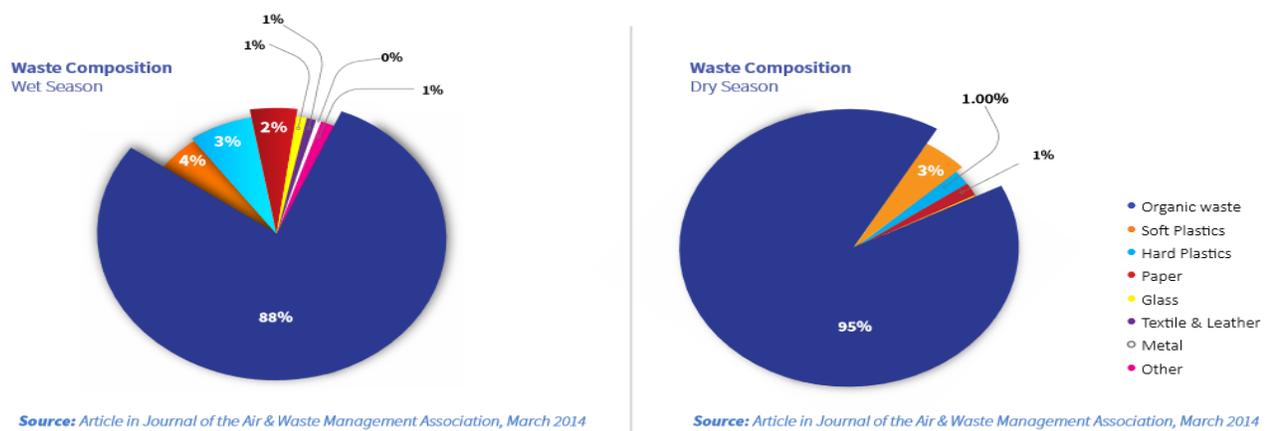
INTRODUCTION

Kampala is a government seat and the capital city of Uganda. Kampala has been referred to as an executive slum due to its breakdown in service delivery. Currently the city is facing increased population growth, increased demand for services, changing consumptions, rising income which has caused urbanization that resulted into increased solid waste generated. While Kampala has a lot of challenges i.e., garbage, potholes, sewer service, construction, traffic management, corruption, health services, environment, stray livestock and management of markets (Mulondo, 2011; Ngwomoya, 2017). Solid waste management has arose as one of the most persistent challenge in all divisions in KCCA hence looking for both local and international companies to turn garbage into reusable products (Lumu, 2019; Ngwomoya, 2017) since Nabugabo Updeal Venture, Homeklin (U) Ltd and Kamapala Solid Waste Management Consortium (KSWMC) are incompetent, monopolistic (Mayanja, 2017) and KCCA is financially constrained thus need support investor's support both in capacity resources and technology.

Current statistics indicate that KCCA has a population of about 1.5 million people which generates about 1,200-1,500 tons of garbage on a daily basis leaving about 60% of the garbage uncollected thus indiscriminate disposal of garbage by the public since they have nowhere to put it (Serugo, 2019). It is also estimated that the per capita generation of garbage in the city is one kilogram per day per person (Lumu, 2019) and 80% of the generated garbage is organic matter hence bulk to handle (KCCA, 2011, 2019).

The Kampala City Council Solid Waste Management Ordinance of 2000 (KCCA, 2000), decrees KCCA and its representatives to ensure that solid waste in Kampala is collected and transported to approved disposal site (Kiteezi) (KCCA, 2013) to satisfy both environmental conservation and public health requirements. Further the ordinance (KCCA, 2000) stipulates that every owner or occupant of residential or commercial premises is responsible for the waste generated at those premises until it is collected by KCCA or operators (Section 4 (1) (KCCA, 2017). The strategic

The indicative waste composition for wet and dry seasons is presented below;



The lower calorific value (LCV) can be determined in a laboratory test or estimated from using a mathematical model. The following arithmetic formula has been used to compute the for Kampala

$$LCV [kcal/kg] = 40 (a + b + c + d) + 90e - 46W$$

% of wet weight:

a = paper

b = textiles

c = wood and leaves

d = food waste

e = plastic and rubber

W = water (assumed to be 60%)

$$LCV = 40 * (2.2 + 0.7 + 88.5) + 90 * 6.6 - 46 * 60 = kCcal/kg (approx. 6.2 MJ/kg)$$

Figure 1: The composition of waste:(N Madinah, Boerhannoeddin, & Binti Raja Ariffin, 2014; Wang & Nie, 2001)

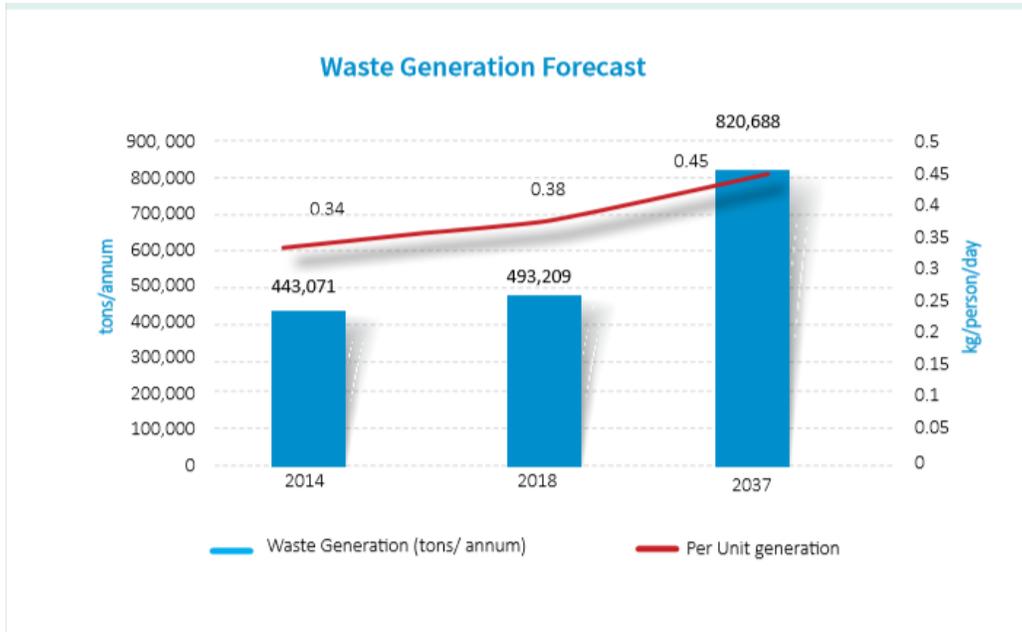


Figure 2: Waste Generation Forecast



Source: (Joel R Kinobe, Bosona, Gebresenbet, Niwagaba, & Vinnerås, 2015)



Source: (Tukahirwa, 2014)

Kampala: In the 1960's had.....



Source: (Tukahirwa, 2014)

The State of service degeneration in the city



Source: (Tukahirwa, 2014)

The specific objectives of the study include

- i. To identify the category of staff in Rubaga solid waste management department
- ii. Examine the tonnage in Rubaga division and Weight of garbage (tonnes)
- iii. Establish the Distance (metres) which garbage was moved to the land fill in 2016
- iv. To access the trips from cesspool emptying in Rubaga division from April to December 2016
- v. To understand the dog carcasses collected in Rubaga division from April to June 2016

Problem statement

KCCA was mandated to compliance of solid waste disposal and management at all scales and levels in Kampala city (Tukahirwa, 2014). However, there is inefficient operations and illegal dumping of waste in communities. It is noted that 60% of the garbage uncollected thus indiscriminate disposal of garbage by the public since they have nowhere to put it (KCCA, 2012; Serugo, 2019). The uncollected garbage is dumped in the city drainage channels that later ends up in Lake Victoria which increase water pollution (A. N. Juliet Waiswa, 2019). KCCA contracted concessionaries to collect garbage in all divisions of Kampala especially from the informal sector and dump it in Kiteezi however some of it remains uncollected and it ends up either on the road side or in the drainage channels.

Well as KCCA doesn't charge them for service delivery their capacity to effectively manage the amount of waste is wanting since they are unable to reach all places given the nature of roads, they work at snail pace, the jam in Kampala. KCCA is mandated to collect garbage from public institutions, markets, schools, taxi parks & health centers. According to KCCA produced waste is 2,200 tonnes, supposed to collect 1000 tonnes while private sector mandated to collect 1,200 tonnes but KCCA only collect 470 tonnes per day leaving 530 tonnes uncollected daily hence 15,900 tonnes of worth uncollected garbage a month in KCCA (Ngwomoya, 2018). KCCA has only 15 garbage collection trucks and need 60 trucks to manage garbage collection on a daily basis in Kampala. Informal traders in slums refused to pay to a tune of 3000-30,000/- per week they

insisted on paying 1000/- this has constrained the private companies since dwellers are defiant to pay making it an uphill task. Politician have encouraged dwellers not to pay the garbage collection fees (Ngwomoya, 2018).

According to world Bank, 62 percent of Kampala population reside in informal settlements and of low income with the increasing population the new migrants settle in informal settlements to reduce on cost of living hence poor disposal is unavoidable (GoU, 2013; Ngwomoya, 2018). Rubaga has 13 parishes, and 905 villages and in zone III and zone 4 covering Makindye and Rubaga South divisions and managed by Homklin the company has 34 big and 24 small trucks. Rubaga is second out of the five divisions in KCCA to have illegal dumping sites and third in generation of solid waste among the five divisions of KCCA (KCCA, 2014). Zone 5 is covered under Rubaga North, Rubaga cathedral, Bulange-Mengo, and Kasubi, is managed by Nabugabo Updeal. Although they have 10 big trucks, they are inefficient in collecting and transporting the solid waste to Kitezi. There is lack of supervision, and streamlining SWM. KCCA takes long to respond to the garbage crisis and in some areas solid waste is never collected and people resort to dumping it carelessly (Ngwomoya, 2018).



Fig: Homeklin company collects garbage dumped by the roadside in Rubaga Division in 2018.
PHOTO BY SHABIBAH NAKIRIGYA Who will sort Kampala's waste disposal mess Homeklin garbage (Ngwomoya, 2018).





Kibumbi zone residents in Rubaga division are likely to catch cholera Homlin is not doing enough to fix the garbage challenges (Nafula, 2016)

Rubaga is third in generation of solid waste among the five divisions of KCCA. While the reason may not be known solid waste should be collected.

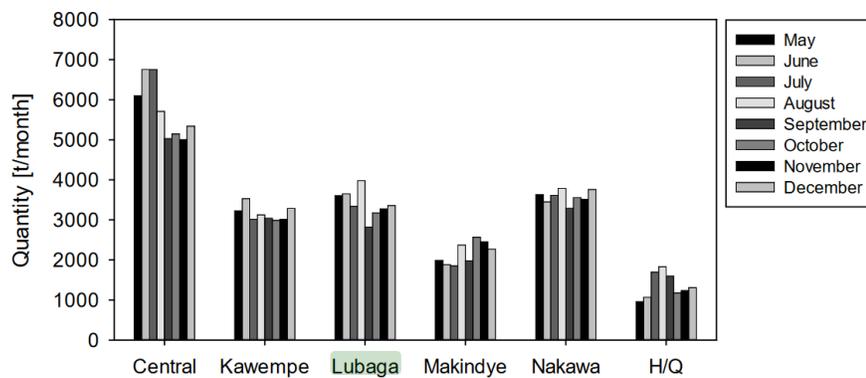


Figure (i) : Monthly Solid Waste collected by KCCA and disposed of at the Kiteezi Landfill between May and December 2012 (KCCA, 2014)

Table (i): Weekly generated waste from the five divisions of KCCA

Division	Average /t·wk ⁻¹	SD /t·wk ⁻¹	Min /t·wk ⁻¹	Max /t·wk ⁻¹
Central	1,273	249	329	1,696
Kawempe	701	141	171	955
Lubaga	756	150	216	1,017
Makindye	482	114	130	649
Nakawa	794	151	186	1,167

The table indicates that Rubaga is third in generating solid waste among the five divisions of KCCA (KCCA, 2014).

Table (ii) indicating legal and dumping sites

Category	Kawempe	Rubaga	Nakawa	Central	Makindye
Open	24	13	1	1	3
Illegal	57	21	15	21	19
Legal	8	6	14	6	1
Total	89	40	30	28	23

From the above table it's clear that Rubaga is second out of the five divisions in KCCA to have illegal dumping sites. This often very hard to access and it adds another challenge and level of complexity to the collection, transportation and management of solid waste in Kampala.

LITERATURE REVIEW

Since solid waste management has been a challenge for KCCA for quite some time now a number of studies investigated a number of different aspects related to solid waste as indicated; Organization (2005) investigated solid waste care at primary centers, Carlesen, Vad, and Otoi (2008) promoted the need for sanitation, poor drainage in bwise (Paul & Namulondo, 2011), perceptions of solid waste Katusiime (2019), generation, use and disposal of solid waste Ssempebwa and Carpenter (2009), city garbage worsens (Media, 2019), perceptions on hugine and sanitation WaterAID (2019), solid waste management in Kawempe Kiwuwa and Alemiga (2017) Lucy Oates (2019) worked on solid waste management lessons from Kampala, Ojok, Koech, Tole, and OkotOkumu (2013) quantities of house hold waste generated.

MK (2012) established household solid waste management, Undefined (2011) waste composition, Bileyo (2013) community participation in solid waste management, Joel Robert Kinobe (2015) solid waste management logistic systems, N Madinah et al. (2014) solid waste management trends and management, drivers of solide waste generation, collection and disposal Aryampa, Maheshwari, Sabiiti, Bateganya, and Bukenya (2019), characterization of municipal waste Komakech et al. (2014), mapping solid waste generation and collection models (Joel R Kinobe, Niwagaba, Gebresenbet, Komakech, & Vinnerås, 2015), challenges of solid waste management in Rubaga division (Namata, 2009), efficiency in solid waste management Arefaine (2014) and solid waste management in urban centers (Nyakaana, 1997).

There is a limited body of knowledge on recentralization of Kampala Capital City Authority (KCCA) Lwanga (2016) assessed the drivers of recentralization of KCCA, Nabukeera Madinah, Boerhannoeddin, Noriza Binti Raja Ariffin, and Michael (2015) established how recentralization affected top-bottom accountability, Gore and Muwanga (2014) investigated the political rights after KCCA reforms, Nabukeera Madinah, Boerhannoeddin, and RA (2017) investigated how shared services have supported a recentralized system of administration among all the divisions

under KCCA, Nabukeera Madinah (2014) examined how the shared service model is helpful during service delivery under the new exemptions and huge funding under KCCA new administration, Kitamirike (2016) explored the new governance and service delivery exploring the agency jurisdiction and authority relationships between the politicians and Bureaucrats and how these reflected and influenced decision making hence affecting service delivery.

METHODS

In order to achieve the research objectives the research used the selected all documents related to solid waste management under KCCA including auditor general reports, KCCA annual reports, Ministerial annual statement reports, local newspapers; i.e., the monitor, new vision, and the independent that had the key words; Solid waste management, KCCA, Rubaga division and used content analysis (Mayring, 2004; Zhang & Wildemuth, 2009) to determine the selection of the appropriate available documentation for analysis; the words solid waste management analysis was useful to determine the content of the material to be selected to arrive at suitable analysis the themes that came out of the study were used to generate the objectives of the for Rubaga division this was the most efficient give the resources available. Rubaga was chosen as an area of study because it's the third in generation and illegal dumping sites of waste in KCCA.

FINDINGS ON SOLID WASTE MANAGEMENT IN RUBAGA DIVISION

Staff Enrollment in Solid Waste Management

KCCA employs different people to manage waste in Rubaga division and these include; Road sweepers, de-silters, supervisors, refuse loaders, refuse scouts, and turn men.

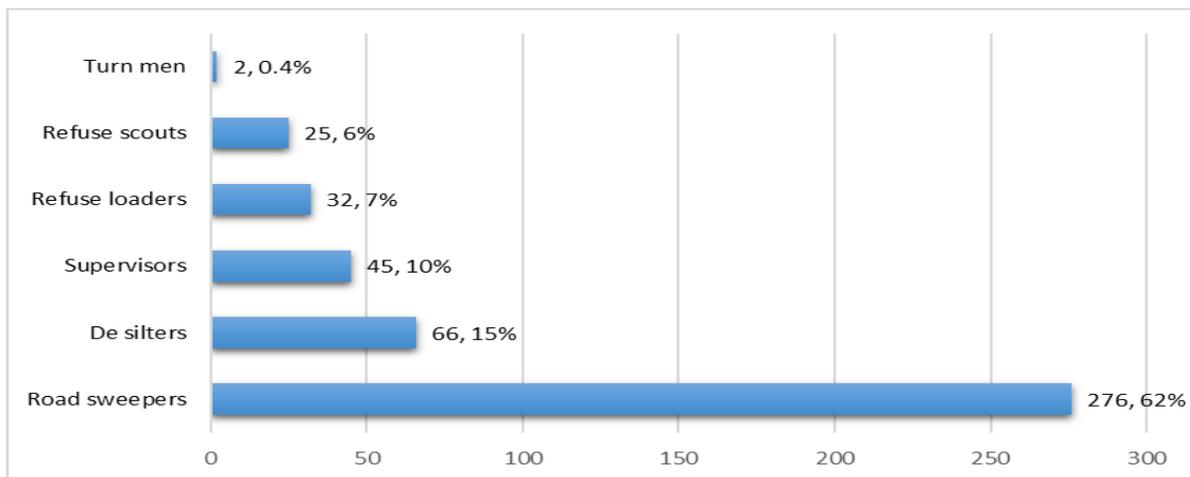


Figure (ii): Staff Enrollment in Solid Waste Management in Rubaga division in 2016

Source: KCCA, 2016

Figure 2 presents the staff enrolled by KCCA in Solid Waste Management in Rubaga division in 2016. KCCA enrolled more road sweepers (62%) in Rubaga division in 2016, followed by de-silters (15%) and few turn men. The highest number of employees enrolled were road sweepers because road sweeping is a section which needs more workers at KCCA compared to other sections.

Tonnage Of Garbage Collected, Fuel Used By Garbage Tracks, And Total Trips Of Garbage Moved From Rubaga Division To The Land Fill From October To December 2016

The study investigated the tons of garbage collected, fuel used and total trips of garbage carried from Rubaga division to the land fill as shown in figure 2 below;

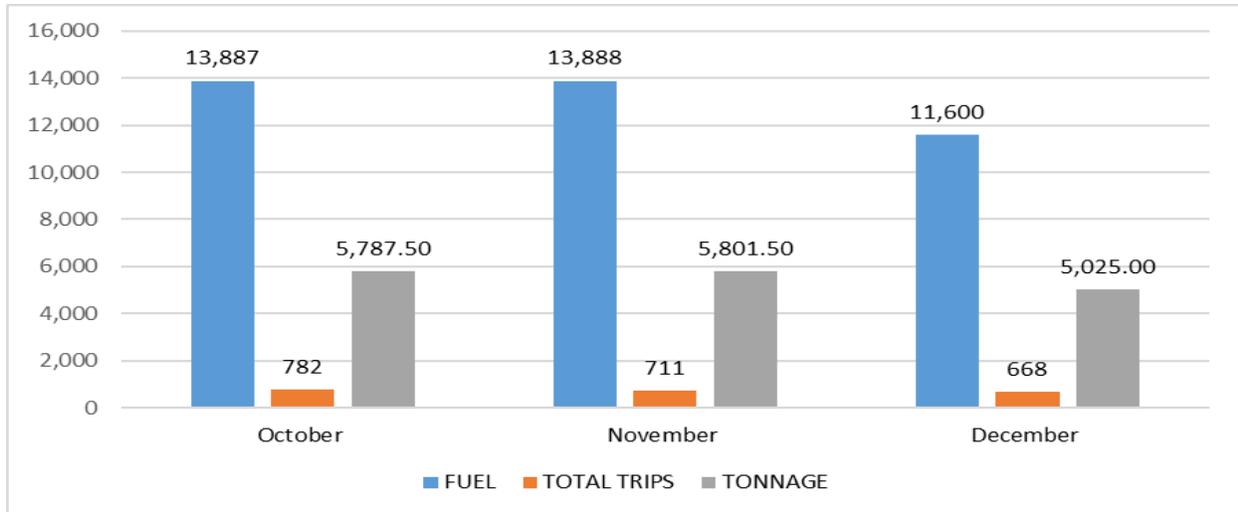


Figure (iii): Tonnage of garbage collected, fuel used, and total trips from October to December, 2016

Source: KCCA, 2016

The findings from figure 3 above show that the tonnage of garbage collected in December 2016 was smaller than that was collected in October and November. This is also reflected from the small number of trips and fuel consumption in December compared to October and November. The fall in trend of garbage collected could be as a result of some measures like burning which are adopted by some households in Rubaga division. It is also believed that some KCCA garbage vehicles remain on the road sides and this would make it hard for some people who are far from the road to bring their garbage.

Distance Moved To Take The Garbage From Rubaga Division To Land Fill

Knowing the distance which the garbage is moved to the land fill is also a proxy for good solid waste management as indicated in figure 3 below;

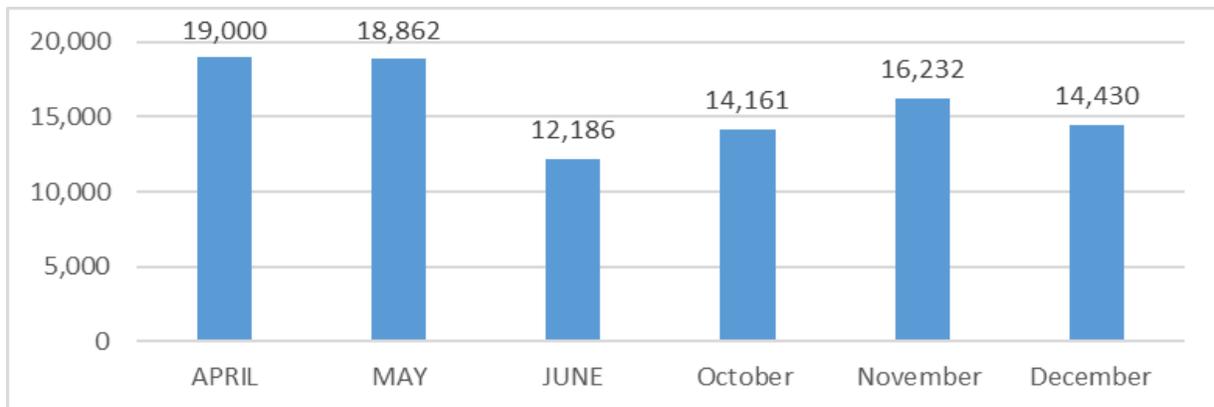


Figure (iv): Distance (metres) which garbage was moved to the land fill in 2016

Source: KCCA, 2016

It is observed from figure 4 above that the trend in distance moved by garbage trucks kept on reducing from April to June in Rubaga division. However, there was a slight increase in the distance moved by garbage trucks from June to November. The findings indicate that more distance was moved by garbage trucks in Rubaga division in April compared to other months in 2016.

Trips From Cesspool Emptying In Rubaga Division

The study also sought to establish the trips from cesspool emptying in Rubaga division because it is also an indicator of how wastes are managed as presented in figure 4 below;

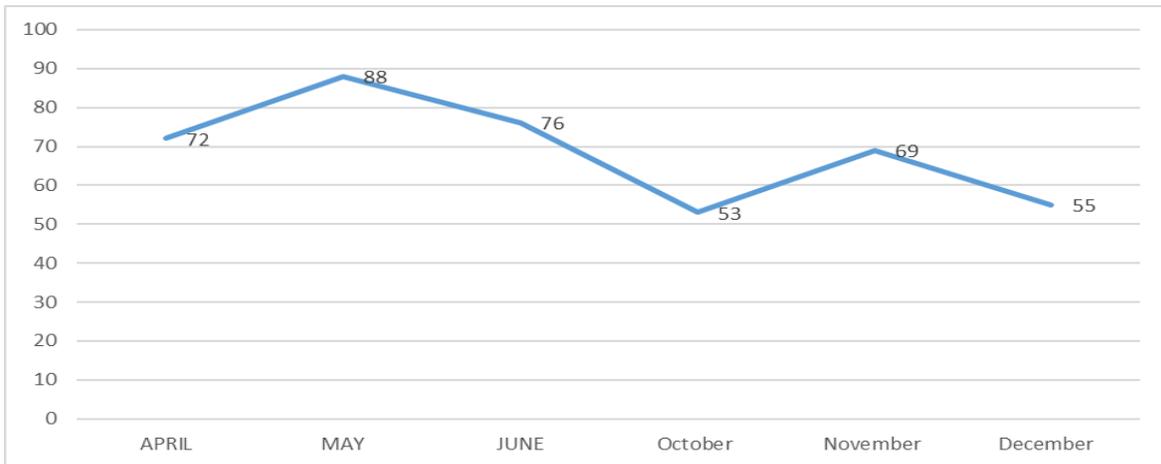


Figure (v): Trips from cesspool emptying in Rubaga division from April to December 2016
 Source: KCCA, 2016

The study findings above in figure 5 show that more trips from cesspool emptying were made in May (88) and few trips were made in October. However, the trend in cesspool emptying kept on reducing in Rubaga in different months. The fall in trend implies that households have adopted better means of managing their wastes other than using septic tanks. This also reflects an improvement in housing in the areas of Rubaga division.

Collection of Dog carcasses

The study also sought to establish the trend of dog carcasses collected in Rubaga division as shown in figure 5 below;

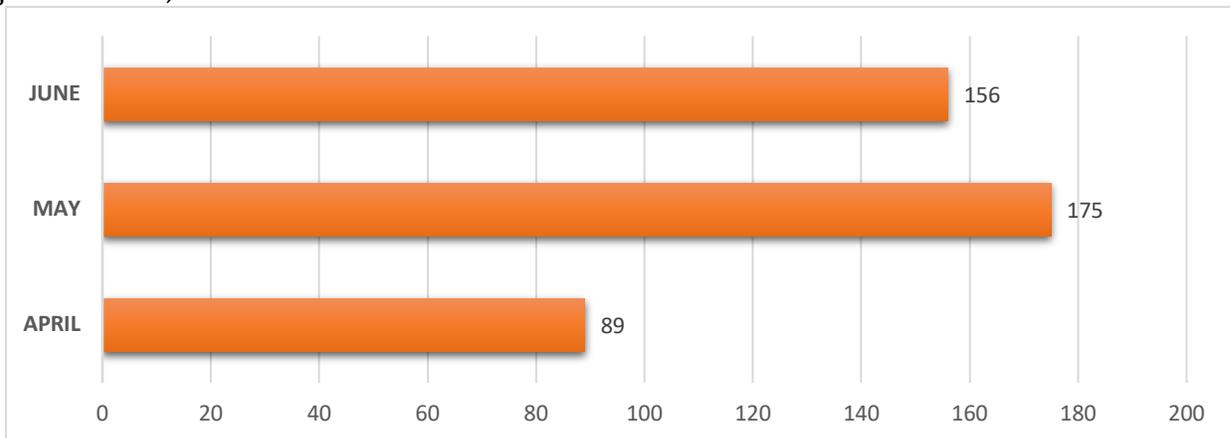


Figure (vi): Dog carcasses collected in Rubaga division from April to June 2016
 Source: KCCA, 2016

It is observed from figure 6 above that the trend of Dog carcasses collected from Rubaga division increased from 89 in April to 156 in June 2016. However, Kampala is believed to have a lot of street dogs without owners and therefore they always move around to look for food and end up being knocked by cars.

Weight of garbage brought onto the Landfill from Rubaga in the month of April-May 2016 (tones)

The study also investigated the weight of garbage brought onto the landfill from Rubaga as shown in figure 6 below;

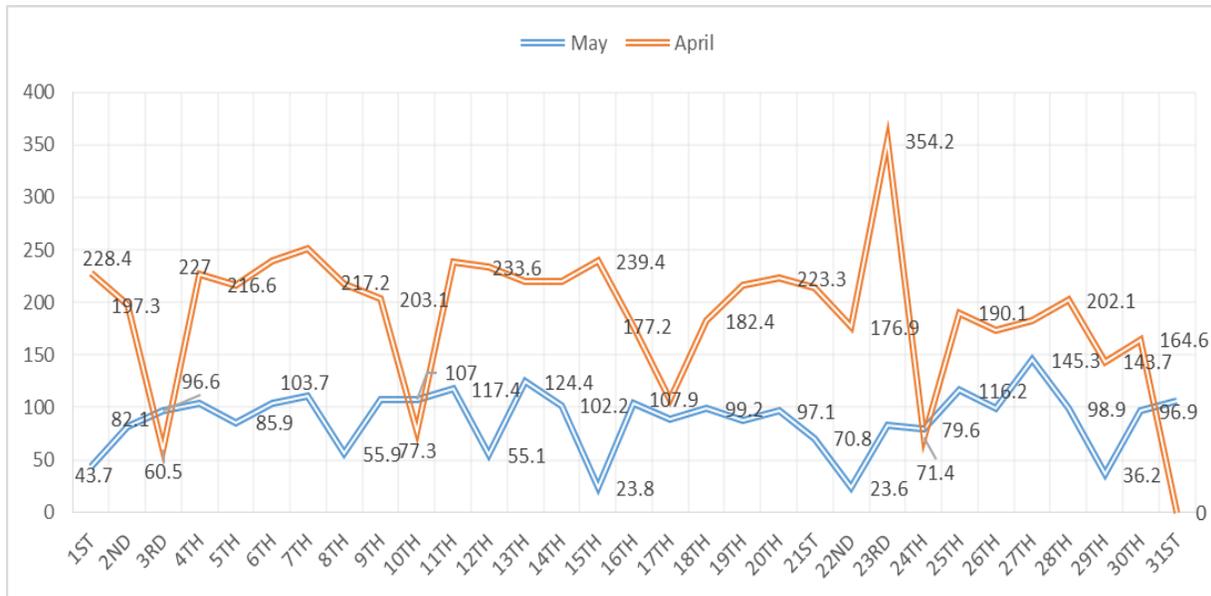


Figure (vii): Weight of garbage (tones)

Source: KCCA, 2016

The results from the study show that more garbage was collected in April compared in May 2016 since the trend of garbage collected in April was above the trend of garbage collected in May.

I always pass by this place in the mornings, it is surprising that this filthy place is in the middle of the city. Nonetheless, why does KCCA collect taxes if they cannot collect the rubbish? I am aware that all traders within the other city areas pay Nabugabo Updeal to collect refuse from their premises. I am not against Nabugabo collecting the rubbish, but KCCA must reduce on the taxes it is collecting from the traders since it has failed to provide them with the basic services (L. M. Juliet Waiswa, 2016).

CONCLUSION AND DISCUSSION

In spite of the two new garbage trucks received by KCCA in 2019 from Lake Victoria environmental management project through the environment ministry and World Bank KCCA can only collect 50% of its generated waste yet the amount of waste is increasing on a daily basis (Kasirye, 2019). KCCA still lags behind in equipment and manpower for garbage collection.

Increase in stray dogs increases the amount of work to be done in Rubaga and KCCA needs to solve this challenge once and for all to avoid work rework. The drop in cesspool emptying in different

months may be a result that Rubaga residents have resorted to private cesspool emptying services since service delivery in Rubaga is not reliable.

The trend in distance moved by garbage trucks kept on reducing from April to June in Rubaga division. However, there was a slight increase in the distance moved by garbage trucks from June to November. This could imply that reduction in movement vehicles had mechanical related challenges and the increase in movement in meters doesn't match the amount of solid waste collected. There is need to improve in supervision in the department of solid waste or even engage car trucking devices to help in the monitoring service delivery.

The tonnage of garbage collected in December 2016 was smaller than that was collected in October and November. This is also reflected from the small number of trips and fuel consumption in December compared to October and November. This may imply that the less fuel was allocated for the specific months due to budget cuts and this affected the number of tonnages of solid waste that were transported to the recommended dumping site in Kiteezi. Rubaga town Clark and management should develop suitable repair and maintenance policies to enable regular repair and maintenance of vehicles so as to reduce on the frequency of vehicle breakdowns.

The study indicates an increase in the number of employees in KCCA enrolled more road sweepers (62%) in Rubaga division in 2016 but the nature of work doesn't commensurate to the number of employees. There is need for close monitoring of all spots in Rubaga division to ensure value for money.

RECOMMENDATIONS

1. There is need for Councilors to sensitize people in their divisions on illegal solid waste dumping this will enable reduction of illegal dumping sites.
2. There is need to amend the KCCA Solid Waste Management Act so that they regulate their (KCCA) relationship with the private service providers. Since some companies are over charges vendors 50,000/-100,000/- (Mayanja, 2017) yet many cannot afford to pay hence KCCA has to cater for them and ensure garbage is collected on a daily basis hence a clean city.
3. Allow as many contractors as possible in collection and management of garbage in Kampala and ensure that the procurement process was fully followed. The public should allow concessionaires to execute their contracts by remitting fees.
4. Continued sensitization of both the political leaders and the public. The public has a responsibility to pay for the generated waste and politicians should desist from politicking solid waste management to enable public private partnership thrive.
5. There is need to continue addressing the emerging issues with the concessionaires in line with the conditions of the contract. The number of contractors assigned to collect solid waste in Rubaga are not enough hence need to increase on the number to have all the generated solid waste collected, transported and dumped at Kiteezi.
6. The community should be encouraged to segregate their waste at source and mobilize communities to responsibly manage their waste and as responsible citizens we need to take responsibility for the garbage we generate and pay for its collection.
7. The city dwellers should be reminded of their responsibility to manage their waste they should complement KCCA duty. KCCA alone and the concessionaires can't manage solid waste in

Kampala. The public should show willingness and support to have a clean city simply by dumping responsibly.

8. There is need for Ugandans to take keen interest in environmental conservation and particularly proper waste disposal and management. This will reduce on the pollution of Lake Victoria as safe many lives.
9. There is need to have the biodegradable, if well taken care of or well sorted, can be used as manure in many farms in Uganda. We should encourage investors to use non-degradable waste for recycling. This will not create employment but will help to have a clean city free of preventable diseases.
10. There is need to develop a coordination mechanism that would stipulate the specific roles and responsibilities of each key stakeholder in order to improve their efficiency in waste management.
11. Counsellors should take up the responsibility to sensitize residents on sorting solid waste for easy collection, utilization and management.
12. KCCA and specifically Rubaga division can increase on the tonnage by collecting and transporting solid waste at night when traffic jam has reduced.
13. There is need for a clear solid waste management plan for each division is will help Rubaga and other divisions to strategize and know when to collected daily garbage and clear illegal accumulated dumping sites. All authorized garbage sites in the divisions should be mapped to allow proper planning, supervision, monitoring and control of the activities at these sites. the divisions should develop a proper supervision, monitoring and control mechanism policy stipulating the specific roles and responsibilities of each stakeholder.

References

References

- Arefaine, H. (2014). Efficiency of solid waste management in Kampala Capital City.
- Aryampa, S., Maheshwari, B., Sabiiti, E., Bateganya, N. L., & Bukonya, B. (2019). Status of Waste Management in the East African Cities: Understanding the Drivers of Waste Generation, Collection and Disposal and Their Impacts on Kampala City's Sustainability. *Sustainability*, 11(19), 5523.
- Bileyo, J. (2013). Assessing Community Participation in Solid Waste Management in Rubaga Division. International Health Sciences University,
- Carlesen, J., Vad, J., & Otoi, S. P. (2008). Kampala City Council—A project for promoting ecological sanitation in Kampala, Uganda. *Sida Evaluation*, 44.
- Gore, C. D., & Muwanga, N. K. (2014). Decentralization is Dead, Long Live Decentralization! Capital City Reform and Political Rights in K ampala, U ganda. *International Journal of Urban and Regional Research*, 38(6), 2201-2216.
- GoU. (2013). Ministerial Policy Statement Financial Year 2013/14
file:///C:/Users/DIRECTOR%20FC/Desktop/PAPERS%20CORONA%20VIRUS-COVID-19/RECENTRALISATION%20AND%20URBAN%20SERVICE%20DELIVERY%20IN%20KAMPALA%20UGANDA-Paper4%20publication/MINISTERIAL%20POLICY%20STATEMENT%20For%20FY%202013-14-1.pdf, retrieved, March, 2018.
- Juliet Waiswa, A. N. (2019). Garbage management: KCCA calls for more partners.
https://www.newvision.co.ug/new_vision/news/1497453/garbage-management-kcca-calls-partners/html, retrieved, December, 2019.
- Juliet Waiswa, L. M. (2016). KCCA halts garbage collection in Nakasero Market.
https://www.newvision.co.ug/new_vision/news/1414563/kcca-halts-garbage-collection-nakasero-market/html, retrieved, May, 2016.

- Kasirye, A. (2019). Lukwago wants city garbage collection policy revised. https://www.newvision.co.ug/new_vision/news/1427431/lukwago-city-garbage-collection-policy-revised/html, retrieved, July, 2019.
- Katusiime, M. (2019). Perceptions and influences on solid waste management in Bwaise slum, Kawempe division Kampala district. Makerere University,
- KCCA. (2000). The Local Governments ACT. Statutory Instrument 243—21. The Local Governments (Kampala City Council) (Solid Waste Management) Ordinance 2000. <https://www.kcca.go.ug/uploads/acts/Solid%20waste%20ordinance.pdf>, retrieved, October, 2018.
- KCCA. (2011). Solid waste collection and garbage management is one of the key services provided by the council. <https://www.kcca.go.ug/Waste%20Management.html>, retrieved, May, 2011.
- KCCA. (2012). Kampala Waste Management Public Private Partnership. <https://www.kcca.go.ug/kwm/HTML>, retrieved, October, 2012.
- KCCA. (2013). Waste Treatment and Disposal in Kiteezi. <https://www.kcca.go.ug/Waste-Treatment-and-Disposal/html>, retrieved, November, 2016.
- KCCA. (2014). RRR-Project From Research to Implementation Component 1 – Waste Supply and Availability Report – Kampala. https://www.eawag.ch/fileadmin/Domain1/Abteilungen/sandec/publikationen/EWM/FS_Quantification_Characterisation/RRR_Research_to_Implementation_Kampala.pdf, retrieved, December, 2019.
- KCCA. (2017). KCCA press release on the Kampala City Council Solid Waste Management Ordinance 2000. https://www.newvision.co.ug/new_vision/news/1444955/kcca-press-release/pdf, retrieved, March, 2017.
- KCCA. (2019). KCCA renews contracts for waste collection companies. <https://www.kcca.go.ug/news/362/#.Xo2ta3JRU2w/html>, retrieved September, 2019.
- Kinobe, J. R. (2015). Assessment of urban solid waste logistics systems: the case of Kampala, Uganda (Vol. 2015).
- Kinobe, J. R., Bosona, T., Gebresenbet, G., Niwagaba, C., & Vinnerås, B. (2015). Optimization of waste collection and disposal in Kampala city. *Habitat International*, 49, 126-137.
- Kinobe, J. R., Niwagaba, C. B., Gebresenbet, G., Komakech, A. J., & Vinnerås, B. (2015). Mapping out the solid waste generation and collection models: The case of Kampala City. *Journal of the Air & Waste Management Association*, 65(2), 197-205.
- Kitamirike, E. (2016). The Governance of Urban Service Delivery in Kampala City: UYONET.
- Kiwuwa, K. G., & Alemiga, J. (2017). Solid waste management methods in kawempe division. *International Journal of Management, IT and Engineering*, 7(8), 37-59.
- Komakech, A. J., Banadda, N. E., Kinobe, J. R., Kasisira, L., Sundberg, C., Gebresenbet, G., & Vinnerås, B. (2014). Characterization of municipal waste in Kampala, Uganda. *Journal of the Air & Waste Management Association*, 64(3), 340-348.
- Lucy Oates, R. G., Peter Kasaija, Andrew Sudmant and Andy Gouldson. (2019). Supporting decent livelihoods through sustainable service provision: Lessons on solid waste management from Kampala, Uganda. https://newclimateeconomy.report/workingpapers/wp-content/uploads/sites/5/2019/04/CUT19_frontrunners_kampala_waste_rev.pdf, retrieved, March, 2020.
- Lumu, D. (2019). Kamyia sets deadline for dealing with city garbage disposal. https://www.newvision.co.ug/new_vision/news/1499166/kamyia-sets-deadline-dealing-city-garbage-disposal/html, retrieved, May, 2019.
- Lwanga, M. M. (2016). Drivers of recentralization in Uganda and effect on service delivery.
- Madinah, N. (2014). Improving delivery of shared public services in Kampala capital city authority Uganda. University of Malaya,

- Madinah, N., Boerhannoeddin, A., & Binti Raja Ariffin, R. (2014). Division Solid Waste Generation and Composition in Kampala Capital City Authority, Uganda: Trends and Management. *IOSR Journal of Environmental Science, Toxicology and Food Technology (IOSR-JESTFT)*, 8(10), 57-62.
- Madinah, N., Boerhannoeddin, A., Noriza Binti Raja Ariffin, R., & Michael, B. (2015). Recentralization of Kampala city administration in Uganda: Implications for top and bottom accountability. *SAGE Open*, 5(3), 2158244015591017.
- Madinah, N., Boerhannoeddin, A., & RA, R. N. (2017). IMPACT OF SHARED HEALTH SERVICES ON SERVICE QUALITY AT HEALTH CENTRES IN KAMPALA CAPITAL CITY AUTHORITY (KCCA). *Journal of Health and Translational Medicine*, 20(1), 6-14.
- Mayanja, B. (2017). KCCA asked to break monopoly on garbage collection. https://www.newvision.co.ug/new_vision/news/1451705/kcca-break-monopoly-garbage-collection/html. retrieved, May, 2017.
- Mayring, P. (2004). Qualitative content analysis. *A companion to qualitative research*, 1, 159-176.
- Media, S. (2019). City Garbage Problem worsens. <https://saltmedia.ug/en/local/1146-city-garbage-problem-worsens.html>. retrieved, November, 2019.
- MK, K. (2012). Rate and Quantities of Household Solid Waste Generated in Kampala City, Uganda.
- Mulondo, E. (2011). Ten key issues Kampala Capital City Authority must fix. <https://www.monitor.co.ug/News/National/688334-1178776-alwy77z/index.html>/retrieved, October, 2018.
- Nafula, A. (2016). Garbage collecting companies are not doing enough to fix the problem in the city. <https://capitalradio.co.ug/garbage-collecting-companies-not-enough-fix-problem-city/>.
- Namata, T. (2009). The challenges of solid waste management: a case study of Kawempe and Rubaga Division, Kampala District, Uganda. Makerere University,
- Ngwomoya, A. (2017). KCCA seeks new investors to manage city solid waste. <https://www.monitor.co.ug/News/National/KCCA-seeks-new-investors-manage-city-solid-waste/688334-4238124-kb0bbkz/index.html>, retrieved, December, 2018.
- Ngwomoya, A. (2018). Why Kampala is still grappling with waste <https://www.monitor.co.ug/SpecialReports/Kampala-still-grappling-waste-/688342-4767956-a1y6j3z/index.html>, retrieved, October, 2019.
- Nyakaana, J. B. (1997). Solid Waste Management in Urban Centers: the Case of Kampala City—Uganda. *East African Geographical Review*, 19(1), 33-43.
- Ojok, J., Koech, M., Tole, M., & OkotOkumu, J. (2013). Rate and quantities of household solid waste generated in Kampala City, Uganda. *Science Journal of Environmental Engineering Research*, 2013.
- Organization, W. H. (2005). Management of solid health-care waste at primary health-care centres: A decision-making guide.
- Paul, M. K., & Namulondo, S. (2011). EXAMING POOR DRAINAGE IN BWAISE II PARISH, KAWEMPE DIVISION, KAMPALA.
- Serugo, G. (2019). KCCA renews contracts for waste collection companies. <https://eagle.co.ug/2019/06/26/kcca-renews-contracts-for-waste-collection-companies.html>, retrieved, July, 2019.
- Ssempebwa, J. C., & Carpenter, D. O. (2009). The generation, use and disposal of waste crankcase oil in developing countries: a case for Kampala district, Uganda. *Journal of hazardous materials*, 161(2-3), 835-841.
- Tukahirwa, J. T. (2014). Solid Waste Management In Kampala under The Transformation Process https://globalmethane.org/documents/events_land_120910_14.pdf, retrieved, May, 2014.
- Undefined. (2011). Background Of Domestic Waste Management In Kampala-Waste composition according to ERL in Kampala. <http://www.angelfire.com/nc/namicol/backgd1.html>.
- Wang, H., & Nie, Y. (2001). Municipal solid waste characteristics and management in China. *Journal of the Air & Waste Management Association*, 51(2), 250-263.

WaterAID. (2019). Consumer perceptions on water, hygiene and sanitation servicedelivery in Kamwokya Parish, Kampala Central Division andKansanga Parish, Makindye Division. <http://envalert.org/wp-content/uploads/2019/11/WASH-Score-CARD-2019.pdf>, retrieved, December, 2019.

Zhang, Y., & Wildemuth, B. M. (2009). Qualitative analysis of content. Applications of social research methods to questions in information and library science, 308, 319.