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EFFECTS OF GOVERNMENT POLICIES ON SOLID WASTE MANAGEMENT IN MICRO, SMALL AND MEDIUM ENTERPRISES IN KENYA: A CASE STUDY OF KAWANGWARE WARD IN NAIROBI

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ABSTRACT

The study aimed to establish the effect of government policies on solid waste management in MSMEs in Kawangware ward, Nairobi. This research was anchored on Waste Management Theory and employed descriptive research design. Stratified random sampling technique was used to pinpoint the target population of 370 MSMEs business owners in Kawangware Ward, out of which 302 respondents participated. Based on the research objectives, the study provided a comprehensive literature review and analysis and formed a conceptual framework. Questionnaires were used to collect data and were researcher administered to comply with WHO and MOH guidelines of Covid-19. Research ethics were observed throughout the study. Statistical Package for Social Science (SPSS) version 26 software was used to analyze data and the summarized data was presented using percentages, figures, graphs, charts, and frequency tables. To determine the effect of government policies on solid waste management, multiple logistic regression analysis was used. Government policies was positively and significantly related to solid waste management ($\beta=0.352$, $p=0.000$, $\alpha =0.05$). The null hypothesis that government policies have no significant influence on solid waste management was thus rejected. Therefore, a unitary increase of government policies leads to an increase of 0.352 in the effectiveness of solid waste management. This suggests that the more government policies are improved, the better the solid waste management. The study recommends the government to draft environmentally friendly policies in support of solid waste management. More priority to be placed on waste management in Kenya and the laws therefore enacted, implemented, and enforced.

Keywords: Government Policies, Solid Waste Management, Challenge, Micro, Small and Medium Enterprises

1.0 INTRODUCTION

Government Policies

Under the Constitution of Kenya 2010, the county governments need to be the lead actors in effectively delivering on their mandate of sustainable waste management services, and the policies should encompass their planning, financing, governance, and technical capacities, National Sustainable Waste Management Policy, (2018).

According to Otieno and Omwenga (2016), the surge in the production and use of Electrical and Electronic Equipment (EEE), in both developing and developed nations, has increased the amount of Waste Electrical and Electronic Equipment (WEEE), generated globally. A study by Otieno and Omwenga (2016), on E-waste management in Kenya, found that the pollution from WEEE harms human health as well as the environment. Kenya's greatest challenges in the management of WEEE, include the lack of appropriate policy and legislative framework including public procurement and disposal laws, the absence of structures for End-of-Life (EoL) product take back and enactment of Extended Producer Responsibility (EPR) inadequate infrastructure for WEEE management and low public awareness.

Profile of Kawangware Ward

Kenya has 47 devolved counties, Nairobi as the capital city has 17 Parliamentary constituencies. Dagoretti North Constituency is amongst the 17 electoral constituencies of Nairobi County, which has 5 Wards, namely Kilimani, Kawangware, Gatina, Kileleshwa, and Kabiro. According to KPHC (2019), Nairobi city has a population count of 4,397,073 people, with Dagoretti North Constituency having a population of around 434,208 residents in a land area of 29.1 sq. Km.

Kawangware is, situated just some 15 km from Nairobi Central Business District (NCBD). It spans approximately 3km, with a population of over 100,000 people, 65% of whom are children and youth, and approximately 5,000 people who come to trade every day, KPHC (2019). Most parts of Kawangware have limited or no waste collection strategies, thus the MSMEs are forced to throw their rubbish in open dumpsites. The dumped waste is either burned, which contributes to the greenhouse gases that affect climate change, or left to accumulate and end up being an eyesore, creating foul smells and a health hazard.

Statement of the Problem

According to agenda 12 of the United Nations Department of Economic and Social Affairs - UNDESA, (n.d.), declares that the backbone of national economies and those of large companies' global supply chains are formed by MSMEs. Their social and environmental impact is relatively small individually, but much larger as a group. Factors hindering MSMEs from complying with environmental standards include; lack of awareness about environmental issues, lack of access to capital, lack of adaptation of environmental regulations to the economic, social, and technical reality of local businesses, recruiting unqualified personnel, effective possibilities of control bodies and less environmental pressure from stakeholders, UNDESA, (n.d.). Nema (2015), states that towns and cities in Kenya are overwhelmed by their own waste due to poor practices and weak policy implementations, which are affecting both public health and the environment, despite the existence of waste management policies and laws. This study, therefore, sought to investigate the effect of government policies on solid waste management in micro, small and medium enterprises in the Kawangware ward in Nairobi

2.0 LITERATURE REVIEW

Theoretical Literature Review

Waste Management Theory

Waste management theory is an evolving amalgamated body of knowledge about waste and its management. This theory was first introduced by Pongrácz, Phillips, and Keisi in 2004. They believed that waste management is the act of preventing waste from causing any harm to human health and the environment and the promotion of effective use of available resources. This theory is constructed under the canopy of industrial ecology to integrate waste minimization and resource use optimization objectives and standards within the ecosystems, Eva Pongrácz, Paul Phillips and Riitta Keiski, (2004).

According to Pongrácz et al (2004), the main priority of waste management is the prevention of waste creation, thus aiding in the preservation of resources. Waste minimization requires that industrial firms commit themselves to increase the advancement of the non-waste leaving process and to seek external use of their waste following the values of Industrial Ecology.

More than half of the municipal waste in the European Union (EU), which is mainly from households, offices, institutions, and shops is either landfilled or incinerated resulting in large environmental impacts. When municipal waste is not recycled, there is a need for new material resources for the production of new goods. Households are believed to be able to play an

important role in lessening of environmental impact from municipal waste through: reduction of their waste, changing their purchasing behavior, segregating their waste into plastic, glass, organic waste, paper, and cardboard waste, and recycling their waste, Ellen Werff, Leonie Vireling, Bas Zuijlen and Ernst Worrell (2019).

Empirical Literature Review

Government policies and solid waste management

According to the National Sustainable Waste Management Policy (2018), Kenya's constitution states that all citizens have a right to a clean and healthy environment, thus addressing the waste management challenges in the country is crucial to delivering those mandates. Human health, as well as the environment, is threatened by the deplorable current state of waste and open dumpsites spread throughout the country. This is not only a permanent eyesore but a loss of valuable resources for wealth and job creation and it harms tourism as well as the security for all Kenyans.

The Environmental Management and Co-ordination (Rev. 2012), Cap.837, states that waste generated within or outside Kenya cannot be disposed of or discharged in a way that will affect human health or pollute the environment. Nevertheless, despite the existence of laws and policies in Kenya to guide waste management, there is weak implementation. Thus poor SWM practices have led towns and cities around the country to be overwhelmed by their waste and subsequently affected human health as well as the environment, NEMA (2015).

According to UNDP, National Appropriate Mitigation Action - NAMA Report (n.d.), the 'Nairobi City County Solid Waste Management Bill' was passed in 2015. The Bill was set for the Nairobi City County Assembly to provide a guideline and outline the responsibility of activities. This Bill was passed to encourage and enable various solid waste management actors to recover waste through reduction, reuse, recycling, and composting, but it is yet to be implemented.

A study by Abila and Kantolae (2013), on municipal solid waste management problems in Nigeria, found that waste management policies and regulations were disseminated to guide and lessen the continuous habits of people dumping and disposing of their waste in water channels, pathways, rivers, and illegal dumpsites. However, the constitutional strength of waste management policy is said to be weak, ineffective, and not monitored. There are instances where endorsed penalties are not used on certain municipalities or individuals. Thus the need for government policies on waste to be revisited, reaffirmed, and restructured.

In most African Countries according to Bello et al (2016), people have witnessed rather poor waste management practices, regarded as indiscriminate dumping of waste in isolated places and water bodies. The prevalence of corruption, lack of transparency, and bad governance in a majority of the African Countries have led to inefficient MSW management despite having set regulations and policies that dictate how waste should be managed. The rapid increase in waste generation in Africa is largely contributed by non-operational laws and policies as well as the importation of substandard products.

Dandora Municipal Dump Site is the only landfill site in Nairobi, Kenya, which was established in 1977. This dumpsite was declared full in 2001, but still in use to date. Poverty has compelled the men, women, and children that rummage in the dumpsite oblivious of the filth or the danger of being exposed to highly hazardous elements such as mercury, lead, and industrial waste. Cartels have taken control of the dumpsite and pay a pittance to the waste pickers who range from adults, teens to children. This is happening acquiescently because there are no laws or regulations in place against such activities, Onyari (2017).

Wanjohi (2018) conducted a study on ‘Solid Waste Management and Effectiveness in the Context of Devolved Systems of Governance in Kenya’, a case study of the Kiambu County municipal area’. The Target population was 130 administrators from which a sample of 60 respondents was drawn using simple random sampling. The findings of the study shows the need for an integrated approach towards SWM in Kiambu County investing in waste-to-energy projects within the county, coordinating reporting systems to minimize doubling of efforts, including SWM into essential County planning, and lastly to come up with an SWM law for Kiambu County.

Ziraba, Haregu, and Mberu, (2016), study on ‘The Potential Impact of Poor Solid Waste Management on Health in Developing Countries, found that the inconsistencies in waste management practices are often a mirror image of the existence of laws and policies governing waste management and the degree of their enforcement. A large proportion of developing countries dispose of their solid waste in open dumpsites or burnt, which in turn affects health and a major contributor to greenhouse gases. Human activities generate waste and are a major cause of environmental and health challenges including diseases such as cholera, typhoid, respiratory complications, and malaria amongst others. The open dumpsites and littering in Kenya are proof enough of the poor implementation of laws and policies governing waste management.

A study by Muchangos, Tokai, and Hanashima (2015), on ‘Analyzing the Structure of Barriers to Municipal Solid Waste Management Policy Planning in Maputo City, Mozambique’, states

that in Maputo, the capital city of Mozambique, waste management policies are hindered by several multifaceted and interrelated barriers. They include lack of cooperation amongst stakeholders, reduced law enforcement, lack of planning, conflict of interest, and corruption as well as institutional structural weakness, this is especially so in developing countries. This adds to the complexity of already complex waste management tasks. Hence governments must establish waste management planning and policies to ensure well-functioning and satisfactory waste management systems.

A study by Amugsi, Mwangi, Haregy, Aboderi, Muindi, and Mberu (2016) on solid waste management policies in urban Africa, found that Kenya has many policies and regulations that guide environmental and SWM both at the national and county levels. However, the current SWM policies are ambiguous and do not show clearly how SWM should be addressed in Kenya and asserted that the Nairobi city authority lacks a clear policy on how it wants to develop the future of SWM. Data collection was conducted in both Nairobi and Mombasa, on 143 respondents who were community members and policymakers.

According to a study conducted by Haregu et al (2016), they looked at the horizontal, vertical, diagonal, internal, and external amalgamation of solid waste management policies in Kenya, to address the related health challenges among vulnerable populations in urban areas of Nairobi and Mombasa. The study showed that the sector-specific and rooted SWM policies are lucid with the general subject of the policy document they are in, however lack the devices of implementation within the same policy framework. Thus, there are huge gaps that exist in specifying clear policy approaches and execution mechanisms.

The literature review in this section shows that government policies on SWM in Kenya do exist, however, there is a lack of implementation on the same. This study sought to find out the effect of government policies on MSMEs towards solid waste management.

Hypothesis

The following research hypothesis was developed to accomplish the aim of the study:

H₀: There is no significant effect of government policies on solid waste management.

Conceptual Framework

The conceptual framework shown in Figure 1 is composed of a diagram that represents the foundation or shows the connection between government policies and solid waste management in MSMEs.

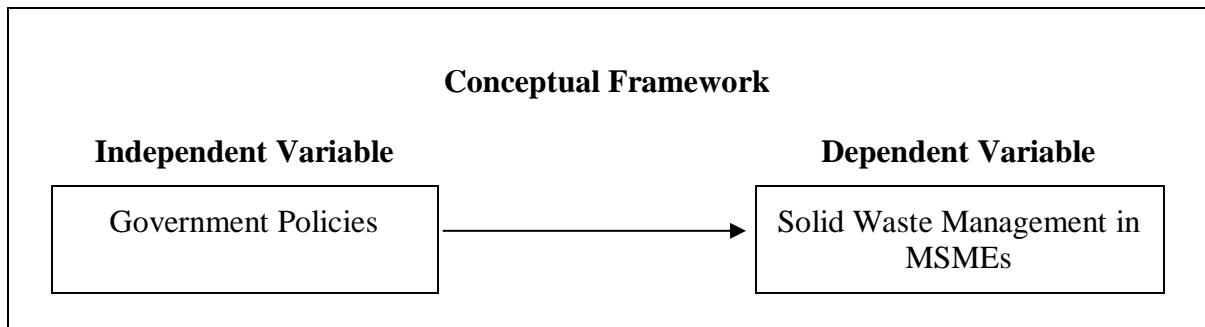


Figure 1: Conceptual Framework

Operationalization of Variables

Operationalization involves the measurement of independent variable or sub-variable using indicators. The variable to be measured is government policies on solid waste management. Weak enforcement of government policies on solid waste has led to poor waste management practices including open dumping and littering.

Table 1: Operationalization of variables

Sub-variables	Indicators	Type of analysis	Measurement of Scale
Government Policies and Legislations	Laws Rules and regulations Authority Guidance	Descriptive	Likert Scale

3.0 METHODOLOGY

Research Design

Quantitative research design was adopted to identify the effect of government policies on solid waste management in MSMEs in Kawangware ward. Descriptive research design was used to define the existing conditions and attitudes through observation. Primary data from a sample size population through structured questionnaires on the problem of the study and secondary data via literature review from previous studies, journals, and archival methods which include electronic records.

Population

The target population consists of 5,018 MSMEs business owners in different sectors within the Kawangware ward. These are some of the stakeholders who are affected by poor waste management, they include hawkers, kiosks, market vendors, tailors, fruit stalls, electronic repair shops, hair salons, hardware shops, and cafeterias.

Table 2: Target Population

Population Category	Target Population	Percentage
Hawkers	3000	60
Kiosks	500	10
Market Vendors	518	10
Tailors	60	1
Fruit stalls	300	6
Electronic repair shop	120	2
Hair Salons	140	3
Hardware shops	180	4
Cafeterias	200	4
TOTAL	5018	100

Sampling Techniques

According to Kimalu and Marimba (2014), in descriptive studies, 10% of subjects drawn from the sampling frame are considered an adequate sample size for the generalization of findings. Therefore, to acquire the appropriate sample size, stratified random sampling method was employed to select 370 Micro, Small, and Medium Enterprises (MSMEs) business owners in Kawangware ward, who formed the sample size by dividing the population into stratas. The method was preferred as the population under study got the same opportunity to be part of the sample.

The study sample was calculated using stratified sample that adopted the Taro Yamane method of:

$$n = \frac{N}{1+N(e)^2}$$

Whereby:

n = sample size

N = population size

e = the level of precision (0.05)

1 = constant

This method accepts a 95% confidence level and a level of precision of 5%.

$$n = 5018 / (1+5018(0.05)^2)$$

$$n = 5018 / (1+5018(0.0025))$$

$$n = 5018 / (1+12.55)$$

$$n = 5018 / 13.55$$

$$n = 370$$

Table 3: Sample size determination

Population Category	Target Population	Sample population
Hawkers	3000	221
Kiosks	500	37
Market Vendors	518	38
Tailors	60	4
Fruit stalls	300	22
Electronic repair shop	120	9
Hair Salons	140	10
Hardware shops	180	13
Cafeterias	200	15
TOTAL	5018	370

Data Collection

Structured questionnaires were used as the primary data collection tool, which was researcher administered. The questionnaires had close-ended questions on a five-point Likert scale to measure the level of the respondent's agreement on the range of issues ranging from strongly disagree to strongly agree. Secondary data was collected through literature reviews from journals and articles.

Data Analysis

Statistical Package for Social Science (SPSS version 26.0) to manage and analyze the data. Suitable tables, figures, and charts were used to summarize the descriptive data. Regression analysis was used to establish the relationship between the dependent variable and the independent variable. Given the structure of the data, logistic regression was determined to be the most appropriate.

4.0 RESULTS AND FINDINGS

Response Rate

A total of 302 out of 370 MSME's business owners, who were the target respondents participated in the study. The overall response rate for the study was 81.60% and the remaining 18% were unresponsive.

The response rate is displayed in Table 4.

Table 4: Response Rate

Category	Respondents	Non Respondent	Percentage of response rate
Respondents	302	68	81

Reliability of the study was tested using Cronbach's Alpha. The results in Table 5 show that Cronbach's value for the variables which formed a scale in the research was above 0.6, thus the information was reliable.

Table 5: Reliability Analysis

Variable	Cronbach's Alpha	Number of Items	Comments
Government Policies	0.622	5	Reliable
Solid Waste	0.711	6	Reliable

Descriptive Statistics

Government Policies

The respondents were asked to give their feedback on a 5 Likert point questionnaire with responses ranging from Strongly Agree (5) to Strongly Disagree (1) on government policies on solid waste management and the responses are presented in Table 4.7.

Table 6: Government Policies

Statement	N	Mean	Std. Deviation
Government policies influence public solid waste management practices	302	3.55	1.064
The municipality addresses your needs in regards to handling waste	302	2.32	1.108
Nairobi City Council lacks a policy on waste reduction at the source	302	4.62	0.544
Local authorities have provided a safe working environment	302	2.76	1.243
Municipal council regulations are in place to make sure people do not litter or dump waste	302	1.94	0.993

Table 6 shows the summary of government policies. On whether SW government policies influence solid waste management practices, a majority of the respondents agree with the statement, (M=3.55; SD=1.064). On whether the municipality addresses the needs of the respondents in regards to handling waste, the majority of the respondents disagreed, (M=2.32, SD=1.108). A majority agreed that Nairobi City Council lacks a policy on waste reduction at the source (M=4.62; SD=0.544). On whether the local authorities have provided a safe working environment for the respondents, a large number of the respondents disagreed (M=2.76; SD=1.243). A great percentage of the respondents (M=1.94; SD=0.993) disagreed with the assertion that municipal council regulations are in place to make sure people don't litter or dump waste.

Solid Waste Management

The last goal of the study was to observe the degree to which several features affect solid waste management. The responses are indicated in Table 7.

Table 7: Solid Waste Management

Statement	N	Mean	Std. Deviation
Solid waste within Kawangware ward is sorted, separated, and collected in the right way before being transported.	302	2.72	1.202
Solid waste that cannot be recycled is compost or destroyed using environmentally friendly technology.	302	2.78	1.003
Solid waste generated in your business is transferred in time to dumping sites.	302	2.62	1.116
Solid waste management needs more priority in society.	302	4.14	0.799
The Solid and recyclable waste is taken in time from the dumpsite by recycling companies.	302	2.32	1.065
Solid waste can be converted to a usable product through recycling.	302	4.15	0.791

Table 7 shows the responses from respondents, a majority of whom are shown by (M=2.72; SD=1.202), agree with the statement that solid waste within Kawangware Ward is sorted, separated, and collected in the right way before being transported. On whether solid waste that cannot be recycled is compost or destroyed using environmentally friendly technology, a large number of the respondents disagree with the statement, shown by (M=2.78; SD=1.003). Respondents were asked their level of agreement on the statement that solid waste generated in their business is transferred in time to dumping sites, a large number shown by (M=2.62; SD=1.116) disagree. On the statement whether solid waste management needs more priority in society, a majority of the respondents agree, portrayed by (M=4.14; SD=0.799). The results agree with the statement from NEMA (2015) who state that the entire waste management cycle

(collection, transportation, and disposal) is hampered by lack of prioritization of waste management in most counties and turn has led to poor budgetary allocation.

The respondent's level of agreement on the statement that the solid waste that is recyclable is taken in time from the dumpsite by recycling companies is shown by (M=2.32; SD=1.065) disagreed with the statement. Lastly, on whether solid waste can be converted to a usable product through recycling, illustrated by (M= 4.15; SD=0.791), a majority agree.

Correlation Analysis

To compute the association between the main variables, inferential analysis using Pearson's coefficient of correlation was conducted. Pearson correlation coefficient is a linear correlation that is given by the letter (r). Correlation ranges from (-1.0 to +1.0). A strong negative correlation between two variables is shown as -1, results of +1 means there is a strong positive correlation between two variables, and 0 represents no connection between the variables (Laerd Statistics, 2018).

Table 8: Correlation Matrix

		Government Policies	Solid Waste Management
Government Policies	Pearson Correlation	1	.852**
	Sig. (1-tailed)		0.000
	N	302	302
Solid Waste Management	Pearson Correlation	.852**	1
	Sig. (1-tailed)	0.000	
	N	302	302

** . Correlation is significant at the 0.01 level (1-tailed).

There is a positive correlation between government policies and solid waste management, the relationship was significant at ($r = 0.852$, $p = 0.000$), this shows that the more government policies are improved towards solid waste, then we can expect better solid waste management practices. A multiple logistic regression model was applied to identify the effects of government policies, on solid waste management in MSMEs.

Table 9: Regression Coefficients

Coefficients						
		Unstandardized Coefficients		Standardized Coefficients		
Model		B	Std. Error	Beta	T	Sig.
1	(Constant)	0.691	0.142		4.853	0.000
	Government Policies	0.352	0.050	0.236	6.987	0.000

a. Dependent Variable: Y

The results from Table 9 shows that government policies identify a significant positive influence on solid waste management with ($\beta = 0.352$, $t = 6.987$, $p\text{-value} = 0.000 < 0.05$). The null hypothesis that government policies have no significant effect on solid waste management is thus rejected.

Government policies was positively and significantly related to solid waste management ($\beta=0.352$, $p=0.000$, $\alpha =0.05$). This implies that a unitary increase of government policies leads to an increase of 0.352 in the effectiveness of solid waste management. This suggests that the more government policies are improved or implemented, the better the solid waste management. The findings of the study are similar to the study by Haregu et al. (2017), which concluded that intensified efforts are required to strengthen the implementation of the policies to improve solid waste management. This is also supported by Njoroge et al. (2014), in their study on the review of municipal solid waste management in Nairobi, Kenya. They found that regulations are inadequately enforced, thus solid waste management seems considered of low priority.

5.0 CONCLUSIONS & RECOMMENDATIONS

The study concludes that government policies do have an effect on solid waste management in MSMEs in Kawangware Ward. Therefore the Ministry of Environment and Forestry in conjunction with the National Environment Management Authority should draft solid waste management policies in support of the planning, financial and technical capacities of the county governments and implement them on the ground in support of better solid waste management practices.

The study recommends that government policies be drafted in support of proper solid waste management that is environmentally friendly. More priority should be placed on waste management in our country and the laws should therefore be enacted, implemented, and enforced. The government should impose fines or community service on MSMEs as well as individuals for any improper disposal of waste. However, the fines can only work if the government plays their part as well, in providing enough skip, litter bins and servicing the waste bins, by sorting, emptying, and transporting the waste in good time.

There is a need for government policies to be drafted, outlining the specific roles and responsibilities for MSMEs, businesses, institutions, industries as well as individuals should play towards sustainable solid waste management. There is a need for waste sorting systems from the source of waste and encourage recycling especially when it comes to packaging materials.

The ministry of environment and forestry should encourage recycling plants and turn waste into useful products for profit and in turn create employment opportunities. There is a need for the government to enforce a law on industrial and multinational companies, that as part of their corporate social responsibility, to produce biodegradable items and for those that are more durable, to have recycling policies, especially on plastic packaged goods. This will help reduce the waste on plastic items. There is an urgent need for the eradication or reduction of importation of plastic and substandard goods from abroad, especially electronics, as they add more waste that we cannot handle.

REFERENCES

Abila, B., & Kantola, J. (2013). Municipal Solid Waste Management Problems in Nigeria:

Evolving Knowledge Management Solution - University of Vassa – Finland.

Retrieved from www.pdfsemanticscholar.org

Amugsi, D., A., Mwangi, J., N., Haregu, T., N., Aboderin, I., Muindi, K., & Mberu, B., U.

(2016). *Solid Waste Management Policies in Urban Africa: Gender and Life –Course Consideration in Nairobi and Mombasa* (Working Paper #14, Urban Africa Risk Knowledge).

https://www.urbanark.org/sites/default/files/resources/REVISED_SWM_PAPER_CLEAN%20%281%29.pdf

- Bello, A., I., Ismail, N., M., & Kabbashi, A., N. (2016). Solid Waste Management in Africa: A Review. *International Journal of Waste Resources*, 6(2). 10.4172/2252-5211.1000216.
https://www.researchgate.net/publication/304923176_Solid_Waste_Management_in_Africa_A_Review
- Environmental Affairs Department (2018). *National Waste Management Strategy (2018)*. Retrieved from: www.environment.gov.za
- Kenya National Bureau of Statistics. (2019). *Kenya Population and Housing Census 2019, Volume 1: Population by County and Sub County*. Kenya National Bureau of Statistics. Retrieved from <http://www.knbs.or.ke>
- Kimalu, P., K., & Marimba, K. (2014). *Research Methods Monitoring and Evaluation* (1st ed.). Nairobi, Kenya: Morven Kester (E.A.) Ltd.
- Haregu, N., T., Ziraba, A., K., Aboderin, I., Amugsi, D., Muindi, K., & Mberu, B. (2017). An Assessment of the Evaluation of Kenya's Solid Waste Management Policies and their Implementation in Nairobi and Mombasa: Analysis of Policies and Practices. International Institute for Environmental and Development (IIED). *Volume Number 29(2)*: 515–532. DOI: 10.1177/0956247817700294 Retrieved from <https://journals.sagepub.com/doi/pdf/10.1177/0956247817700294>
- Ministry of Environment and Natural Resources. (n.d.). *Nationally Appropriate Mitigation Action on a Circular Economy Solid Waste Management Approach for Urban Areas in Kenya*. United Nations Development Program (UNDP).
https://www.undp.org/content/dam/undp/library/Environment%20and%20Energy/MDG%20Carbon%20Facility/NAMA%20Report%20Kenya%20Waste%20FNL_July.pdf
- Muchangos, S., D., L., Tokai, A., & Hanashima, A. (2015). Analyzing The Structure of Barriers to Municipal Solid Waste Management Policy Planning in Maputo City, Mozambique. *Environmental Development*, 16, 76-89.
<https://doi.org/10.1016/j.envdev.2015.07.002>
- National Environment Management Authority. (2015). *The National Solid Waste Management Strategy*. Retrieved from: www.nema.go.ke

- National Environment Management Authority. (2018). National Sustainable Waste Management Policy (2018). Retrieved from www.environment.go.ke
- Njoroge, B., N., K., Kimani, M., & Ndunge, D. (2014). Review of Municipal Solid Waste Management: A Case Study of Nairobi, Kenya. *International Journal of Engineering And Science*. Volume No. 4. Issue 2. PP 16-20. Retrieved from: http://erepository.uonbi.ac.ke/bitstream/handle/11295/92590/Njoroge_Review%20of%20municipal%20solid%20waste%20management:%20a%20case%20study%20of%20Nairobi,%20Kenya.pdf?sequence=1
- Otieno, B., & Omwenga, E. (2016). E-Waste Management in Kenya: Challenges and Opportunities. *Volume 6* (12). *Journal of Emerging Trends in Computing and Information Sciences*. The University of Nairobi. Retrieved from https://www.researchgate.net/publication/290947613_E-Waste_Management_in_Kenya_Challenges_and_Opportunities
- Pongrácz, E., Phillips, P., S., & Keiski, R., L. (2004). Evolving the Theory of Waste Management – Implications to Waste Minimization. Retrieved from: <https://www.witpress.com/elibrary/wit-transactions-on-ecology-and-the-environment/78/14399>
- Professor Onyari, J. (2017). Special Report for #Closedumpsites: Kenya's Dandora Dumpsite: A Health and Environmental Tragedy. International Solid Waste Association (ISWA). Retrieved from <https://www.iswa.org/home/news/news-detail/article/special-report-for-closedumpsites-kenyas-dandora-dumpsite-a-health-and-environmental-tragedy/109>
- Pearson Product-Moment Correlation. (2018). Laerd Statistics. Retrieved from <https://statistics.laerd.com/statistical-guides/pearson-correlation>
- United Nations Department of Economic and Social Affairs – UNDESA (n.d.). Micro-, Small, and Medium-Sized Enterprises (MSMEs) and their Told of Achieving the Sustainable Development Goals. Retrieved from https://sustainabledevelopment.un.org/content/documents/25851MSMEs_and_SDGs_Final3120.pdf

- Wanjohi, B., K. (2018) Solid Waste Management and Effectiveness in the Context of Devolved Systems of Governance in Kenya: The Case Study of Kiambu County Municipal Areas. The University of Nairobi. Faculty of Arts. Department of Sociology and Social Work. Retrieved from: <http://hdl.handle.net/11295/104278>
- Werff, E., V., Vrieling, L., Zuijlen, B., V., & Worrell, E. (2019). Waste Minimization by Households- A Unique Informational Strategy in the Netherlands. Retrieved from: <https://doi.org/10.1016/j.resconrec.2019.01.032>
- Ziraba, K., A., Haregu, N., T., & Mberu, B. (2016). A Review and Framework for Understanding the Potential Impact of Poor Solid Waste Management on Health in Developing Countries. *Archives of Public Health*, 74, Article number 55. Retrieved from <https://doi.org/10.1186/s13690-016-0166-4>

