
Waste Management Practices And Environmental Conservation: A Case Study Of Kisoro Municipality

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Abstract

Waste management is increasingly becoming a great concern to most urban centers of most developing world including Kisoro Municipality. The uncollected waste from households, manufacturing (plastic and metal) sector, agriculture products, institutions (health and education) center, and market places are not properly disposed, others are scattered in open spaces, along the roads, water sources and drainage systems. This report is from the study conducted to find out; the level of waste management practices, challenges encountered by the community in waste management, the level of environmental conservation and the impacts of poor waste management practices on the environment in Kisoro Municipality. This study has mainly employed both qualitative and quantitative methods of data collection where 90 respondents were sampled from Kisoro Municipality. The analysis of the findings was performed using Microsoft excel package. The findings revealed that the level of waste management practices was low indicating that people use poor waste management practices like use of plastic bags and dumping wastes in open space. Many challenges were found to be faced by the community including lack of funds and inaccessibility of waste dumping sites. The study also established that the level of environmental conservation is low in Kisoro Municipality. Among the impacts of poor waste management practices on the environment were land degradation, blockage of drainage systems, and creation of breeding sites for insects and vermins, extinction of bio-diversity, air/water pollution. The communities suggested the following solutions; financial support to facilitate waste management and community sensitization. The study recommended the following: allocation of enough funds to National environment management authority (NEMA), supervision and enforcement of strict laws and, sensitization of community about the consequences and the dangers of environmental degradation by the government, Strict implementation of bye-laws that tasks the residents to pay garbage collection fee by Municipal authorities, the community were urged to improve the type of facilities they use in relation to the nature and volume of wastes produced i.e. covered dust bins should be preferred to plastic bags since plastic bags add more problems to the environment and also they were discouraged from dumping of wastes in an open space or along the road sides, and the individuals were advised to manage wastes at their exposure before criticizing the authority for poor sanitations.

Keywords: Waste Management Practices And Environmental Conservation

Background of the study

Waste has always been generated by humans. In areas with low population density waste generation may be negligible. In higher population areas even largely biodegradable waste had to be dealt with. Sometimes this was released back into groundwater

with environmental impacts like Nor Loch (Christopher et al., 2022). The Maya of Central America had a fixed monthly ritual, in which people of the village would gather together and burn their garbage in large dumps .

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In Uganda like in many other developing countries, typically one to two thirds of the waste generated is not collected (Aisha & Rebecca, 2023). As a result, the uncollected waste, often 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.

In Kampala alone, waste generation estimations have been rated at 0.2 metric tons per person annually on average (Jackline et al., 2023). Therefore, considering an urban population of 3.7 million people that is 13.4% of the total population (Uganda population secretariat, 2007), it means that approximately 740,000 metric tons of solid waste are generated in urban areas per year. Of this only 41% solid waste generated is disposed off properly (Peter & Nicholas, 2023). The remaining 51% is left uncollected thereby ending up dumped in drainage and sanitary drainage channels, natural water courses, manholes, undeveloped plots and road sides among other unfit places (NEMA, 2004). According to report published by Kamusime Bamabasi, 2022, a leisure walk through any one of the four major streets of Kisoro Municipality means that one is bound to meet heaps of garbage stacked by the roadside. Plastic bottles lay waste in most of the drainage systems across the growing border town while putrid smells from degradable materials fill the air (Musa et al., 2023).

In a bid to put some control, the Kisoro Municipality Council introduced by-laws indicating rates for garbage collection in July 2022 which was effected immediately. Each shop will pay a monthly fee of 20,000 Ushs, households to pay 1,000 Ushs per sack,

hotels to pay 1,000 Ushs per sack, bus parks to pay 30,000 Ushs per month, boda-boda stages to pay 5,000 Ushs per month, each market to pay 100,000 Ushs per month, schools to pay 100,000 Ushs on a monthly basis. Managing and disposing of garbage has been one of the major challenges in Kisoro Municipality and if the public is to adopt the new practice of paying for garbage generated, we can see a clean and healthy Municipality, the Kisoro Municipality health officer, Moses Acar explained. However, the public rejected the by-laws saying the decision to impose garbage collection fees on the people without first making adequate consultation goes against the will of the people.

A common misconception is that environmental protection and sustainable initiatives must come at the expense of economic development (Derrick et al., 2023). This is true for managing wastes, a process which depletes natural resources and pollutes the environment if not done correctly. Proper waste management practices can be costly in terms of time and resources and so it is important to understand what options exist for managing waste in an effective, safe and sustainable manner (Christopher et al., 2022). According to Brenda Rufener, (2023) environmental conservation refers to the practice of protecting earth's Natural environment through organizations, governments and personal actions by individuals. The study of environmental conservation is so important because it enlightens us to what we need do to conserve our planet and resources.

K. Kinsella, 2023 defines environmental conservation as attempting to protect the habitats of certain life forms including plants and animals. Conservation

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efforts can also include taking steps to protect the earth from harmful effects of manmade and natural hazards and contaminants (Ampaire et al., 2015).

Rinkesh, 2012 defines environmental conservation as the practice of us humans saving the environment from the loss of species, and the destruction of the ecosystem, primarily due to pollution and human activities. Conservation is vital in helping both animals and trees as we are all dependent on one another for survival (Christopher & Felex, 2022). Trees convert carbon dioxide produced by factories into oxygen, which helps us breathe and respire. Democratic Republic of Congo can fight for the

protection of the tropical bits threatened by the industry of the wood in the pond of Congo because it risks losing 40 % of its bits in the next forty years. That is why; Africa need to fight climate change, deforestation, water pollution, etc., and respond positively on the urgent problems connected with the environmental protection. In fact, the impact of the industrial pollution of the industrialized nations constitutes an important threat and climate change challenges to the populations and more particularly in Africa because, pollution, deforestation, erosion of soil, drought and floods have increased with the desperate state of the continent (Christopher, 2022).

Statement of the problem

Environmental conservation is a vital practice because; it preserves bio-diversity, provides good and healthy air and water quality, protects human health, protects the earth from climate changes and supports agriculture in an area (Winny et al., 2023). However, the performance of environmental conservation is still low (NEMA, 2017) and waste management practices may be a contributing factor as garbage generated from homes, hotels, bus parks, schools, markets and other busy places in Kisoro Municipality are always seen dumped along the roadsides, corridors and other undesignated places (Christopher et al., 2022). Therefore, the study seeks to find out the impacts of poor waste management practices on the environmental conservation in Kisoro Municipality.

Specific objectives

1. To find out the level of waste management practices in Kisoro Municipality.
2. To find out the challenges faced by the community in waste management in Kisoro Municipality.
3. To find out the level of environmental conservation in Kisoro Municipality.
4. To find out the impacts of poor waste management practices on environmental conservation in Kisoro Municipality.

Methodology

The study adopted a descriptive design which attempts to answer a research question that asks what effects one variable has on another variable. It also describes situations and events such that, an observer will observe an event or a situation and try to describe it as best as he/she can according to how things unfold. The study involved both qualitative and quantitative approaches during data collection. Qualitative approach enabled the researcher to give a complete, detailed description of phenomenon while quantitative approach enabled the researcher to construct statistical models in an attempt to explain the findings. The study was conducted within Kisoro Municipality that has

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for a long time been seen battling with wastes. The issue of waste management is still a very big challenge in Kisoro district especially within the Municipality where different activities including but not limited to trading always takes place. Kisoro Municipality is about 75km away from the busy town of Kabale Municipality in Kigezi region in Western Uganda. Target population was defined as a complete set of individuals, cases/objects with some common observable characteristics of a particular nature distinct from other population. According to Ngechu (2004), a population is a well-defined set of people, services, elements, group of things or households, and events that are being investigated. According to Uganda bureau of statistics 2020, the total population of Kisoro Municipality was 17,700 people. The sample size of this study was selected by the researcher subjectively. A number of 90 respondents were used for this study which was representative of the entire population. This population comprised of only the residents of Kisoro Municipality. Sample is a subset of the total population (George & Makery, 2003). The researcher selected a total of 18 respondents from each of the five selected busiest areas within Kisoro Municipality which makes up the sample size of 90 respondents. This is because these places are always densely populated and operates on a daily basis, producing a huge amount of wastes. These areas include; markets, bus parks, schools, hotels and homesteads

Table 1: Composition of the respondents

<i>S/N</i>	<i>Places</i>	<i>Number of respondents</i>
<i>01</i>	<i>Markets</i>	<i>18</i>
<i>02</i>	<i>Bus parks</i>	<i>18</i>
<i>03</i>	<i>Schools</i>	<i>18</i>
<i>04</i>	<i>Hotels</i>	<i>18</i>
<i>05</i>	<i>Homesteads</i>	<i>18</i>
<i>Total</i>		<i>90</i>

Source: Researcher's construction, 2023

The study used primary data to determine the relationship between the variables. Primary data are the data observed or collected directly from first-hand experience (Orodho, 2013). In this method, informed members of the community were selected to inform the researcher on specific issues regarding the study. The instrument employed a key informative guide which included questions on specific objectives of the study. This helped in gathering qualitative information required for the study. The data was coded, categorized and analyzed using computer software packages MS Excel (2010). Quantitative data were analyzed by simple Microsoft excel which generated frequency tables, charts and graphs to present the findings. Qualitative data generated from the interviews were analyzed through careful interpretation of meanings and contents and ordering and ranking with descriptive manner. The presentation of data was done using tables, graphs and pie charts that were drawn using micro soft excel program. Data was analyzed inform of tables, frequencies and percentages using SPSS & STATA (Nelson et al., 2022)

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RESULTS

Level of waste management practices in Kisoro Municipality

Table 2: Level of waste management practices

<i>Waste management practices</i>	<i>Nature</i>	<i>Level</i>	<i>Frequency(n)</i>	<i>Percentage (%)</i>
<i>Use of Municipal skips</i> <i>Use of dust bins</i> <i>Taking wastes to established collection sites</i> <i>Burning wastes</i> <i>Dumping wastes in waste pits</i>	<i>Good</i>	<i>High</i>	<i>19</i>	<i>29.2</i>
<i>Use of plastic bags</i> <i>Dumping waste in an open space</i>	<i>Poor</i>	<i>Low</i>	<i>46</i>	<i>70.8</i>
<i>Total</i>			<i>65</i>	<i>100.0</i>

Source: Field data

The level of waste management practices in Kisoro Municipality was found to be low as 70.8 % of the total population in the study agreed that they use poor waste management practices to manage wastes generated which are; dumping wastes in an open space and use of plastic bags to dispose of waste. 29.2 % of the respondents agreed that they dump wastes in the waste pits or burn them, use dustbins to dispose wastes (Aisha & Rebecca, 2023), use municipal skips or take wastes to established waste collection sites for further management which are the good waste management practices.

Table 3: Challenges faced by the community in Kisoro Municipality in waste management

<i>Challenges being faced</i>	<i>Frequency(n)</i>	<i>Percentage (%)</i>
<i>Shortage of funds</i>	<i>57</i>	<i>87.7</i>
<i>Inaccessible dumping sites</i>	<i>57</i>	<i>87.7</i>
<i>Lack of waste management tools</i>	<i>59</i>	<i>90.8</i>
<i>Low standard of living</i>	<i>54</i>	<i>83.1</i>
<i>Low educational level</i>	<i>52</i>	<i>80.0</i>
<i>Average</i>	<i>56</i>	<i>86.2</i>

Source: Field data

There are many challenges encountered by the community in Kisoro Municipality during waste management as in the table 3 above, with average 86.2% of the respondents in Kisoro Municipality who agreed that; they do not have enough funds to manage wastes, waste dumping sites are inaccessible, they do not have waste management tools, their standards of living is low and their level of education is as well low.

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Level of environmental conservation in Kisoro Municipality

Table 4: Level of environmental conservation in Kisoro Municipality

<i>Methods of environment conservation</i>	<i>Respond</i>	<i>Level</i>	<i>Frequency(n)</i>	<i>Percentage (%)</i>
<i>Proper waste disposal</i>	<i>Agree</i>	<i>High</i>	<i>15</i>	<i>23.1</i>
<i>Planting and replanting more trees</i>				
<i>Protecting air/water from contamination</i>				
<i>Minimizing chemical use and use of compost fertilizers</i>				
<i>Educating public about dangers of degradation</i>				
<i>Total</i>			<i>65</i>	<i>100.0</i>

Source: Field data

The level of environmental conservation in Kisoro Municipality was found to be low as majority (76.9%) of the respondents pointed out that they do not practice some of the good measures that allow us conserve our environment. These practices include; proper waste disposal, planting and replanting of trees, protecting air/water from contamination, minimizing chemical use and using compost fertilizers where necessary and educating others about the dangers of environmental degradation. Only 23.1% of the respondents agreed that they carry out the above mentioned good practices of environmental conservation.

Impacts of poor waste management practices on environmental conservation in Kisoro Municipality

Table 5: Impacts of poor waste management practices on environmental conservation in Kisoro Municipality

<i>Impacts of poor waste management practices on environmental conservation</i>	<i>respond</i>	<i>Nature</i>	<i>Frequency (n)</i>	<i>Percentage (%)</i>
<i>Land /soil are degraded and lost fertility</i>	<i>Disagree</i>	<i>Positive</i>	<i>17</i>	<i>26.2</i>
<i>Air/water is contaminated</i>				
<i>Breeding sites for insects & vermin are created</i>				
<i>Drainage systems are blocked</i>				
<i>Bio-diversity is destructed</i>				
<i>Drought/flood is in the area</i>	<i>Agree</i>	<i>Negative</i>	<i>48</i>	<i>73.8</i>
<i>Total</i>			<i>65</i>	<i>100.0</i>

Source: Field data

Poor waste management practices in Kisoro Municipality were found to be exhibiting negative impacts on the environment as the majority of the respondents (73.8%) agreed that as a result of poor waste management practices; their land/soil had been degraded and lost fertility, air/water had been contaminated (polluted), breeding sites for

insects and vermin were created in their areas, some drainage systems had been blocked, bio-diversity had been destructed and drought/flood were being experienced in their areas.

Conclusions of the findings

The researcher drew a conclusion on this objective basing on the findings that the level of waste management practices in Kisoro municipality is low and this is due to the use of poor waste management practices such as dumping of wastes in an open area and use of plastic (polythene) bags to dispose wastes.

The researcher concluded on this objective that there are several challenges being encountered by the community and these are as a result of failure of the government to intervene, neglect of responsibility by the responsible officials and ignorance by the community.

The researcher concluded that the level of environmental conservation is low and this is due to failure to employ good practices such as proper waste disposal, planting and replanting trees, protecting air/water from contamination, minimizing chemical use and using compost fertilizers where necessary and educating others about the dangers of environmental degradation.

The researcher concluded on this objective that there were several negative impacts imposed on the environment due to use of poor waste management practices in Kisoro Municipality. Some of these negative impacts include: land/soil being degraded resulting in loss of fertility, air/water contamination (pollution), breeding sites for insects and vermin being created in their areas, drainage systems blockage, bio-diversity destruction and drought/flood being experienced in their areas.

Recommendations of the study

Basing on the findings of this study and the conclusions drawn, the following are the recommendations:

To the government

Enough funds should always be allocated to National Environment Management Authority (NEMA) to enable it fund and monitor its activities in different parts of the country.

The government should put in place strict laws and supervise its enforcement to see that the perpetrators of environmental conservation are penalized.

The community should from time to time be educated about the consequences and the dangers of environmental degradation.

To the Municipality

A bye law should be put in place that tasks the residents to pay garbage collection fee to help in efficient waste management in the area.

To the community

There is the need to improve the type of facilities used in relation to the nature and volume of wastes produced i.e. covered dust bins should be preferred to plastic bags since they add more problems to the environment.

The dumping of wastes in an open space or along the road sides should be abolished.

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There is need for individuals to manage the wastes at their exposure before criticizing the authority for poor sanitation.

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