

Stakeholder Involvement in the Implementation of Solid Waste Management Policies in Wajir Municipality, Wajir County, Kenya

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Abstract

A policy framework for solid waste management is embedded in the Kenyan Constitution 2010. This is designed to ensure that citizens enjoy the right to a clean and healthy environment. Even though the policies are considered adequate to guarantee proper solid waste management in Kenya, county governments grapple with solid waste management. Available policy frameworks have not translated to improved solid waste management in major cities and municipalities such as Wajir Municipality. This study, therefore, assessed the effect of stakeholder involvement on successful execution of SWM policies in the Municipality of Wajir. The study was anchored on the integrated sustainable waste management model. It adopted an explanatory study design. The study population was all 404 employees of the Municipality of Wajir at all management levels. Sample size was 201 employees from this municipality. Both descriptive and inferential analysis were used to examine the data. The study found that involvement of stakeholders in the implementation of these policies had a positive and significant impact. In particular, the frequency of municipal dialogue and consultative meetings with important solid waste management stakeholders, the frequency of stakeholder education and awareness campaigns on solid waste management, and the prompt feedback given to these stakeholders for their participation in solving key problem areas. The study concluded that stakeholder involvement is a pertinent institutional determinant of the implementation of solid waste management policies in Wajir Municipality. The study recommended the need for regular and sustained stakeholder education and awareness campaigns on solid waste management.

Keywords: *Stakeholder involvement, implementation, solid waste management policies, Wajir Municipality*

1.0 Introduction

Waste management has evolved into a global challenge over several decades. It is estimated that generated global waste will rise from 1.3 billion tons yearly as per 2010 statistics to about 2.2 billion tons annually by 2025 (Lagbas-Aranas, 2015). Regrettably, this increased waste

generation has not been matched with adequate and efficient waste management systems and policy in many nations (Deitche, 2020). Solid waste management (SWM) is normally carried out to minimize the impact of solid waste materials resulting from human activities on health, the environment, or aesthetic (Narayana, 2019). While SWM is a problem that affects all nations, its priority and scope differ between and within nations.

Ferronato and Torretta (2019) state that developed nations like Germany and the United States appear to have successfully dealt with SWM and are concentrating on minimizing environmental pollution and maximizing resource recovery. However, basic collection, treatment, and disposal services for the growing urban population are the focus of attention in developing and less developed nations. In China, the modernization of traditional SWM techniques, for instance, fitting some landfills with gas extraction systems, has been extensively undertaken (Hannan, Al Mamun, Hussain, Basri, & Begum, 2015). On the contrary, in India, over 90 percent of municipal solid waste (MSW) is openly and illegally disposed of and collection coverage is often lower than 60% (Zhang, Tan, & Gersberg, 2010).

In Africa, many countries have witnessed increased uncontrolled disposal of solid waste hazardous and nonhazardous, resulting in its heightened accumulation in public spaces. In South Africa, most of the SW to a tune of 90.1% is landfilled while the rate of recycling the waste is currently at 9.9% (Godfrey, 2016). In major cities such as Johannesburg, illegal dumping and burning of garbage in open spaces are among the major public health hazards (Kubanza & Simatele, 2020). In Ghana, the situation is not different. In Accra for example, the provision of waste collection services is limited where only 40% of city households are privileged to have waste collection containers (Kyeré, Addaney, & Akudugu, 2019). In Uganda, MSW collection is among the most crucial public service inaccessible to the larger population especially those living in the slums (Mukama, et al., 2016).

Similarly, in Tanzania, about 50% of the waste produced in urban areas even in large cities like Dar es Salaam, is not collected or is inappropriately disposed (Yhdego & Kingu, 2016). This state of affairs leads to accumulated solid waste in urban areas including the marketplaces. In Kenya, SWM is challenging. The systems for the collection of waste are not efficient and disposal is done in a manner that harms the environment.

It is noted that 30-40% of all solid waste generated in urban areas is not collected, and less than half of the population is served (Munala & Moirongo, 2017). As a result, many nations face difficulties in managing solid waste appropriately in urban areas. As a result, a key to the successful management of large amounts of waste generated by urban settlements in the future is the development of new sustainable SWM tools. Since only well-established SWM systems operating within a concrete policy framework will minimize the risks associated with solid waste, this necessitates the adequate implementation of a wide range of policies (Haregu, Ziraba, & Mberu, 2016). According to (Dulo, 2009), the standards, efficacy, and coverage of solid waste from "Cradle-to-Grave" are all enhanced by waste management policies. The policy aspect of SWM acts as a supportive condition that helps in directing the proper management of SW and is crucial in addressing both short- and long-term goals (Bong, et al., 2017).

In many nations, a major challenge is that the development of diverse policies is not matched by equivalent enhancements in SWM practices where the gap between policy and sufficient actions is still very huge (Haregu, et al., 2017). Policy implementation in SWM is a chief problem that many developing nations are confronted with (Amir & Anto, 2018). The result has been continued mishandling of solid waste. An example is Kenya where even though there are excellent policies and legislations that cover SWM, authorities more so in urban areas

cannot execute them. Thus, many nations are struggling with SWM issues not because they lack deliberate policy frameworks meant to tackle the vast increases in SW, but due to poor efforts towards providing proper mechanisms for implementing these policies. The governance and implementation of SWM policies involve several stakeholders tasked with diverse duties and responsibilities (Wilson, Velis, & Rodic, 2013).

The Municipality of Wajir is among the 59 Kenyan municipalities and is situated in Wajir County (County Government of Wajir, 2019). Wajir Municipality is among the urban areas facing serious SWM problems compounded by interlinkages with other poor services such as poor sanitation and water supply. Consequently, it suffers from frequent outbreaks of waterborne diseases as a result of high e-coli levels partly attributed to water contamination (Saya, 2019). Reports from the county government highlight that only 1.2% of the waste generated within the municipality is collected while 0.6% is disposed of in a waste pit, 8.3% in a public garbage heap, and 89.9% is burned (County Government of Wajir, 2018).

The SWM Framework for the Municipality of Wajir also reveals that currently, the municipality lacks a sound SWM system (County Government of Wajir, 2019). Waste generation analyses based on the field study highlighted in the framework was 27,181,264.5 kg in 2019 and was estimated to be 31,929,272.7kg in 2024. The SWM system in the municipality according to the framework is marred with low coverage and irregular waste collection services, inappropriate transportation trucks, unregulated waste collection fees, open dumping, inappropriate siting of a dump site, and low compliance with environmental legislation. The trend of poor SWM in the municipality has persisted despite the numerous policy documents and legislations meant to guarantee a safe and hygienic living environment for the county residents by facilitating the tackling of SWM problems. Therefore, it was necessary to undertake a study to assess the effect of stakeholder involvement on the successful execution of SWM policies in the Municipality of Wajir to make recommendations for policy and practice towards improving how solid waste was handled in this municipality.

1.1 Problem Statement

There is no exhaustive research or documentation on SWM policy implementation in Wajir Municipality. Existing evidence showed that various countries such as Sweden had been able to provide adequate quality and efficient SWM services in their urban areas by successfully implementing existing policies that guided waste management. Thus, this study sought to assess the institutional determinants of SWM policy implementation in Wajir Municipality so that informed recommendations to improve the current SWM condition in the Municipality are suggested. From the available literature, it was evident that a commendable discussion existed on the development of various policies/frameworks guiding SWM in Kenya. However, the level of implementation of these policies especially by devolved units was not extensively studied.

The study by Haregu et al. (2017) assessed how SWM policies had evolved in Kenya and their application in Nairobi and Mombasa while Ogutu (2019) assessed the factors influencing the efficacy of the policies on SWM in Nairobi. The study by Abas and Wee (2014) though relevant to this study, focused on the concerns and factors that hindered the effective execution of SWM policies in Malaysia. Other studies with a different objective from that of this present study included that of Shehu, Bashir, and Mubi (2018) which examined the impact that ineffectively implemented SWM policies had on community involvement in SWM in Bauchi State, Nigeria. This present study sought to assess the effect of stakeholder involvement on the successful execution of SWM policies in the Municipality of Wajir.

1.2 Research Objective

- i. To establish the effect of stakeholder involvement on the implementation of solid waste management policies.

2.0 Literature Review

2.1 Theoretical Review

Integrated Sustainable Waste Management (ISWM) Model

The ISWM model is a framework that WASTE, a Dutch non-governmental organization, and its partners in developing countries developed in the 1980s. The Collaborative Working Group on SWM in Low- and Middle-Income Countries made additional improvements to the model in the middle of the 1990s. Since then, this model has been widely used as a way to improve and make waste management in developing countries municipalities more sustainable (Premakumara, Abe, & Maeda, 2011).



Source: (Wilson, Rodic, Scheinberg, Velis, & Alabaster, 2012)

Figure 1: Integrated Sustainable Waste Management (ISWM) Model

The ISWM model is very useful in studying intricate and multifaceted systems in an integrated manner. Accordingly, several researchers and policymakers have recommended the application of this model in comprehending and solving SWM difficulties, particularly in nations with low incomes (Hoornweg & Bhada-Tata, 2012). This model, as stated by Marshall and Farahbakhsh (2013), acknowledges the significance of three aspects when analyzing, developing, or modifying a waste management system. These facets are the stakeholders interested in SWM, the various elements/stages through which the materials or waste generated at different points is moved or flow from source towards treatment and final disposal and the aspects or “lenses” through which the system is analyzed also termed as the ‘aspects’ of the ‘enabling

environment' all of which work together so that sustainability is attained in the system (Wilson, Velis, & Rodic, 2013).

This model was significant to this research since it anchored the study on the implementation of SWM policies in the Municipality of Wajir. This study sought to investigate policies as aspects that influenced the elements of SWM systems in the municipality. In particular, the study focused on the execution of various policies as an aspect of the 'enabling environment' in addressing the issues of SWM in the municipality so that sustainable SWM practices were cultivated. The model also guided the various indicators of SWM policies' implementation in the study and how specific factors connected to the local authority in the municipality had affected the implementation of SWM policies. This was informed by the fact that the municipality as a stakeholder in SWM carried the greatest responsibility in managing SW as mandated in law.

2.2 Empirical Review

Efficiency in managing solid waste is very important. In developed nations, good progress has been made in the management of solid waste through proactive policies and sound institutions. In the United States, a city such as New York which generated vast amounts of solid waste amounting to 14 million tonnes daily, was able to effectively manage its solid waste (Ferronato & Torretta, 2019). In Germany, advanced SWM techniques and adequate laws have proved resourceful in reducing and recycling solid waste. The level of recycling in Germany had increased to 62% by 2010 and landfilling was almost reduced to zero (Srivastava, 2013).

However, SWM in large parts of developing countries is still characterized by unrestrained dumping and/or littering together with domestic burning causing dire health and environmental problems (Al-Khatib, Monou, Zahra, Shaheen, & Kassinos, 2010). In Malaysia, Sreenivasan, Govindan, Chinnasami, and Kadiresu (2012) observed that despite the existence of a concrete national policy on SWM, the rate of solid waste recycling was still low at 5% resulting in the disposal of most of the generated solid waste at landfills many of which had been used beyond their capacity. While focusing on various rural cities in India, Narayana (2019) discovered that dumping or burning waste in unregulated areas was a habitual practice.

Sustainability in managing SW persists as a key challenge facing majority of African nations, particularly in the cities. Godfrey (2016) posits that only 66 percent of the population in South Africa had their solid waste collected by their municipalities or private companies contracted by the municipals where solid waste-related issues were more challenging in highly disadvantaged urban areas. Most of the solid waste in SA to a tune of 90.1% was landfilled while the rate of recycling the waste was currently at 9.9% (Greencape, 2017).

Aryampa et al. (2019) evaluated the condition of SWM in the cities in East Africa and established that a significant amount of waste (36%) was left uncollected in Kampala alone. Yhdego and Kingu (2016) examined SWM in eight urban centers of Tanzania and discovered that except for Mwanza City, all the other centers faced challenges related to the disposal of solid waste. In Kenya, the SW generated has been growing linearly, and as a result of the fast sprouting of urban areas, the present amount (about 4 million tones/year) produced was projected to grow two times by 2030 (Haregu, Ziraba, & Mberu, 2016).

Ogutu, Kimata and Kweyu (2018) in their study on the role played by different institutions in SWM in Nairobi County observed that the preferred alternative seemed to be habitually collecting and hoping that the relevant authorities will make it disappear. Haregu, Ziraba, and Mberu (2016) specified that about half (1500 tons/day) of the solid waste in Nairobi City was not being collected. In Mombasa County, the study by Wekisa and Majale (2020) revealed that

only 13 percent of households were able to access the SWM services provided by the county due to mismanaged primary collection points. Even though several studies on SWM had been conducted in major cities in the country, empirical studies in other smaller towns in particular Wajir Municipality and which were grappling with major solid waste issues were lacking.

Sandra and Wegmann (2019) carried out a study on MSWM services in Africa. This was a desktop study. The study established that in a majority of the nations, the central governments were accountable for the general SWM governance and set out policies for this exercise. The study discovered that too often, decisions were made without adequate consultative sessions with key stakeholders, particularly the communities and workers. Such actions brewed fights and hostility in several locations and some incidences stalled major implementation plans resulting in poor delivery of SWM services.

Yukalang, Clarke, and Ross (2018) explored SWM solutions in Thailand. A qualitative case study design was employed. The study found that SWM policy frameworks and systems worked only if they were readily understood. According to the study, a supposed lack of stakeholder involvement resulted in disinterest in the environment which hindered citizen behaviors such as waste separation at source and following collection schedules as required. The study observed that when citizens were engaged in developing solid waste policies and general planning, the uptake of new MSWM strategies was readily taken up.

Mberu and Gatura (2018) assessed the integration and development of SWM policies in Kenya. The study involved document analysis. The study observed that even though the existing SWM policies aspired for zero waste, the challenge of SWM was considerable in several urban areas in the nation. The study argued that although the specific roles and responsibilities of the numerous stakeholders and actors in SWM were distinctly delineated in these policies, they were inadequately operationalized. The failure to engage these key stakeholders reduced the levels of compliance to lay down policy guidelines such as the unfair readiness of the public to pay for SW evacuation service which resulted in poor SWM in the state.

3.0 Methodology

The study adopted an explanatory study design. The study population was all 404 employees of the Municipality of Wajir at all management levels. The sample size was 201 employees from this municipality. Using a semi-structured questionnaire, primary data were acquired. Both descriptive and inferential analysis were used to examine the data. Frequencies and percentages were included in the computed descriptive statistics. Afterwards, chi square tests were used to show how the variables were related, and logistic regression analysis was used to show how the independent factors affected the dependent variable. Charts and tables were used to present the results.

4.0 Results and Discussion

4.1 Descriptive Statistics

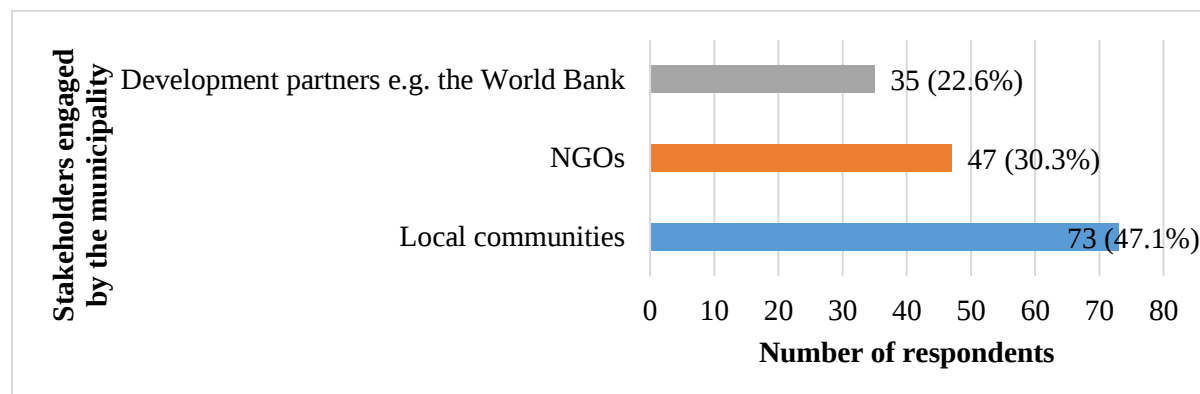
Stakeholder Involvement

The study determined whether the municipality management engaged different stakeholders in different functions as recommended in its integrated solid waste management framework. All the respondents indicated that the municipality management in deed engaged different stakeholders in different SWM functions.

Stakeholders Engaged by Municipality Management in Various SWM Functions

The main stakeholders engaged by the municipality management are highlighted in Figure 2. It was pointed out by 73 (47.1%) of the respondents that local communities were engaged, 47 (30.3%) cited NGOs such as the Arid Lands Development Focus (ALDEF) Kenya while 35 (22.6%) of the respondents noted that the municipality engaged development partners such as the World Bank. This finding suggested that Wajir Municipality management valued the contribution of different stakeholders in the implementation of various SWM functions.

Figure 2: Stakeholders Engaged by Municipality Management in SWM

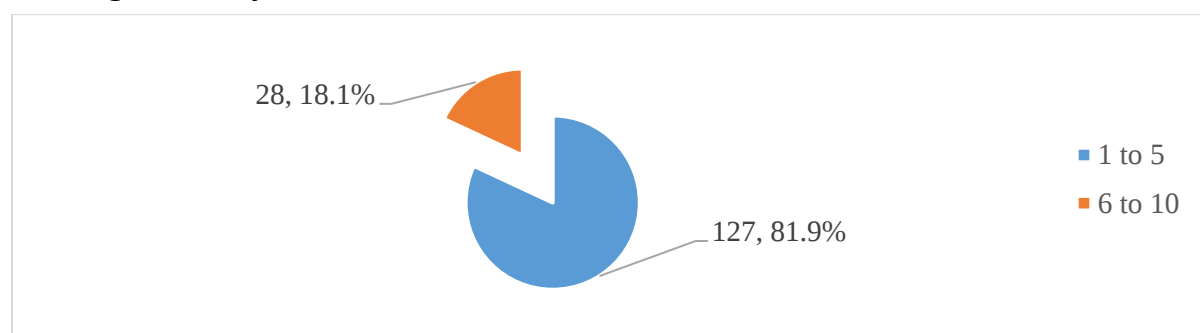


Source: Research Data (2022)

Dialogue and Consultative Meetings with Key Stakeholders on Ideal Solutions to SWM Challenges

The number of times in a year the municipality held dialogue and consultative meetings with key stakeholders to reach a consensus on the ideal actions needed to realize the policy objectives on solid waste management is exhibited in Figure 3. The outcomes uncovered that the municipality management held these meetings 1 to 5 times in a year according to 127 (81.9%) of the respondents while the rest, 28 (18.1%) in number, indicated that these meetings were held 6 to 10 times in a year. These findings meant that Wajir Municipality held a few dialogue and consultative meetings with key stakeholders yearly to reach a consensus on the ideal actions needed to realize the policy objectives of SWM.

Figure 3: Number of Times in a Year the Municipality Held Dialogue and Consultative Meetings with Key Stakeholders



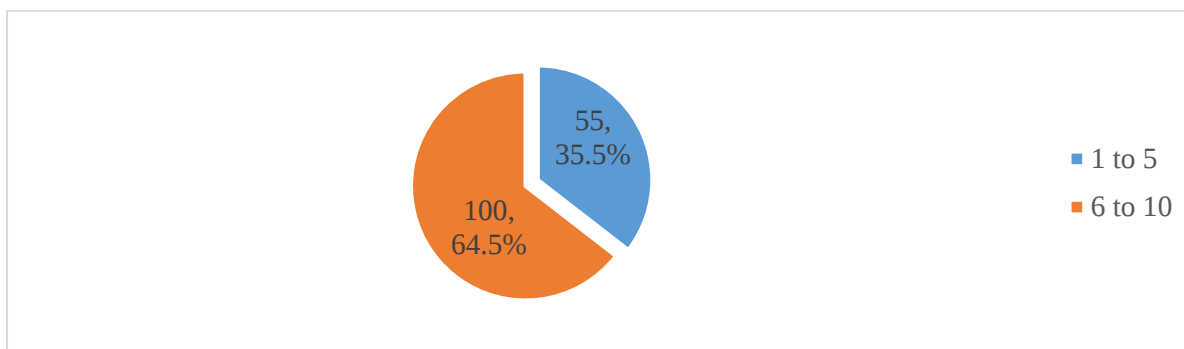
Source: Research Data (2022)

Stakeholder Education and Awareness Campaigns on Solid Waste Management

The findings presented in Figure 4 showed the number of times a year the municipality conducted stakeholder education and awareness campaigns to empower them provide innovative solutions to handling different policy challenges on SWM in the municipality. It

was established that 55 (35.5%) of the respondents indicated that the campaigns were conducted 1 to 5 times a year while the rest, 100 (64.5%) in number, noted the campaigns were undertaken 6 to 10 times a year. These findings meant that Wajir Municipality management organized several campaigns yearly to educate and create awareness of SWM issues facing the municipality in pursuit of innovative solutions.

Figure 4: Number of Times in a Year the Municipality held Stakeholder Education and Awareness Campaigns

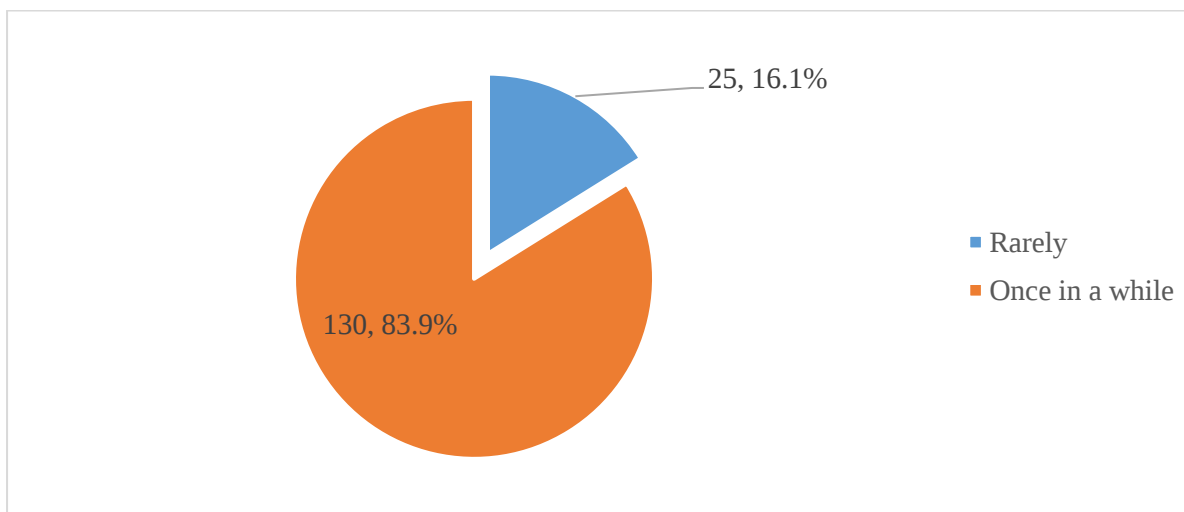


Source: Research Data (2022)

Collective Efforts by Relevant Stakeholders Towards the Achievement of Specified Policy Objectives on SWM

The study examined how often collective effort by all the relevant stakeholders was taken towards the achievement of specified policy objectives on SWM in the municipality. From Figure 5, it was stated by 25 (16.1%) of the respondents that such efforts were rarely taken while the rest, 130 (83.9%) in number, asserted that these efforts were taken once in a while. It can therefore be said that collective efforts by all the relevant stakeholders toward achieving the specified policy objectives on SWM in Wajir Municipality were infrequent.

Figure 5: Frequency of Collective Effort by Relevant Stakeholders Towards Achieving Specified Policy Objectives on SWM

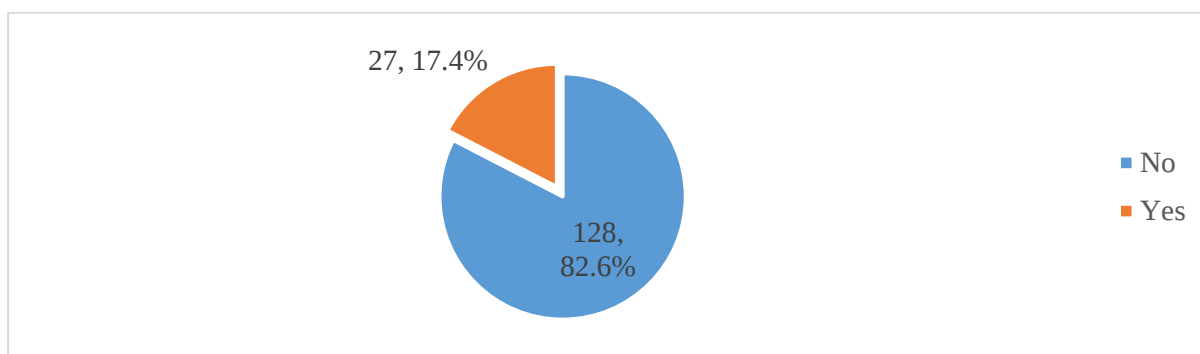


Source: Research Data (2022)

Provision of Feedback Required by Stakeholders to Participate in Addressing Key SWM Policy Areas

The study further investigated whether the municipality management provided prompt feedback required by stakeholders for them to take part in addressing key policy problem areas in SWM in the municipality. As shown in Figure 6, it was reported by 27 (17.4%) of the respondents that prompt feedback was provided while 128 (82.6%) of the respondents, the majority, decried that such feedback was not provided by the municipality.

Figure 6: Provision of Prompt Feedback to Stakeholders to Enable them Take Part in Addressing Key Policy Problem Areas in SWM

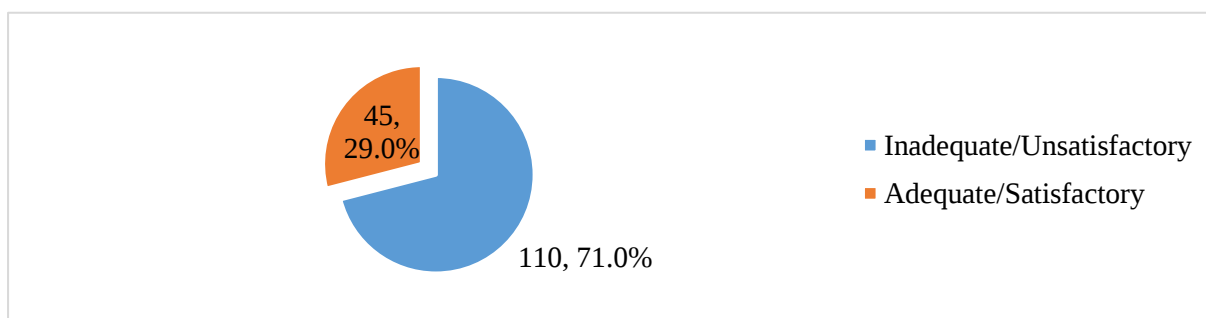


Source: Research Data (2022)

Implementation of Solid Waste Management Policies in Municipality of Wajir

The participants rated the overall adequacy of various SWM aspects such as coverage of solid waste collection services, scheduling of solid waste collection, safe disposal of solid waste in designated areas, solid waste treatment, solid waste reuse or recycling, and reduction in the solid waste generated in Wajir Municipality. The outcomes are exhibited in Figure 7. It was uncovered that 110 (71.0%) of the participants described the solid waste management in this municipality as inadequate/unsatisfactory while the rest, 45 (29.0%) in number, found various SWM aspects in the municipality adequate or satisfactory. These findings suggested that the realization of policy objectives on solid waste management in Wajir Municipality was poor.

Figure 7: Adequacy of Solid Waste Management in Wajir Municipality

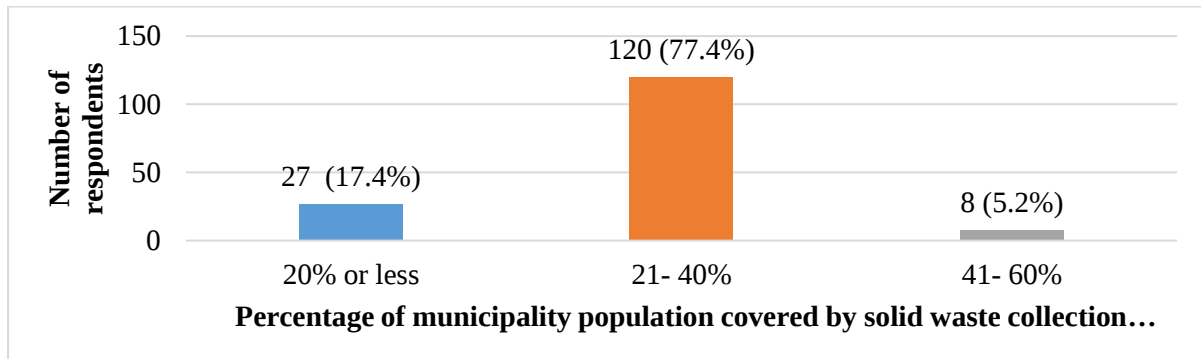


Source: Research Data (2022)

The study determined the percentage of the Wajir Municipality population that was covered with solid waste collection services. According to 27 (17.4%) of the respondents, 20% or less of this population was covered. 21 to 40% of the population was covered by these services as reported by 120 (77.4%) of the respondents while 8 (5.2%) of the respondents noted that 41 to 60% of the population in Wajir Municipality was covered by solid waste collection services.

These findings suggested that the coverage of solid waste collection services in Wajir Municipality was low.

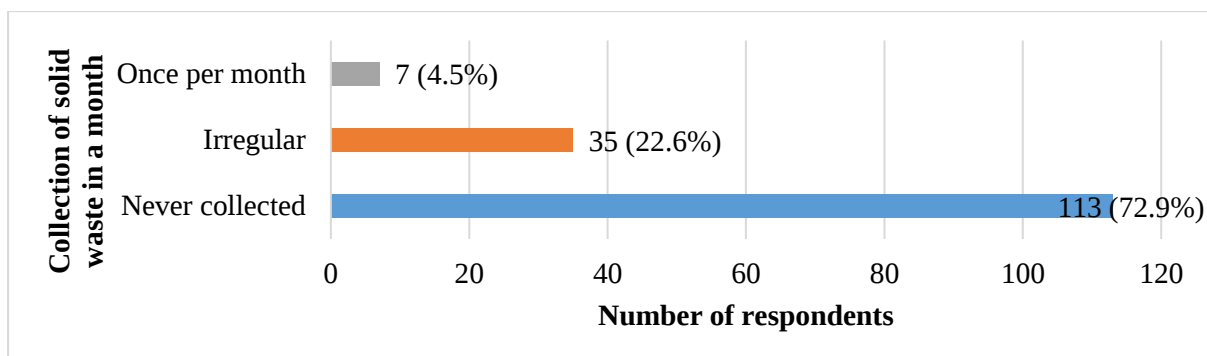
Figure 8: Wajir Municipality Population Covered by Solid Waste Collection Services



Source: Research Data (2022)

Figure 9 reveals how often in a month solid waste was collected in Wajir Municipality from the viewpoint of the participants. The findings uncovered that 113 (72.9%) of the participants decried that the solid waste was never collected, 35 (22.6%) of them argued that the collection was irregular while 7 (4.5%) of the participants stated that solid waste in this municipality was collected once per month. These findings implied that most of the solid waste generated in Wajir Municipality was either not collected at all or irregularly collected.

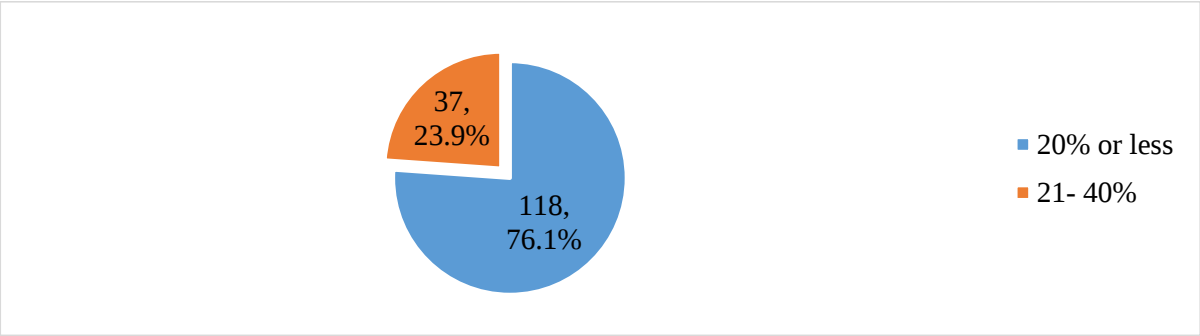
Figure 9: How Often in a Month Solid Waste Collected in Wajir Municipality



Source: Research Data (2022)

The percentage of Wajir Municipality solid waste collected regularly was determined and the findings are given in Figure 10. It was reported by 118 (76.1%) of the respondents that 20% or less of this solid waste was collected regularly while the rest, 37 (23.9%) in number, indicated that 21 to 40% of the municipality solid waste was collected regularly. These findings confirmed that only a small proportion of the population in Wajir Municipality enjoyed regular solid waste collection services.

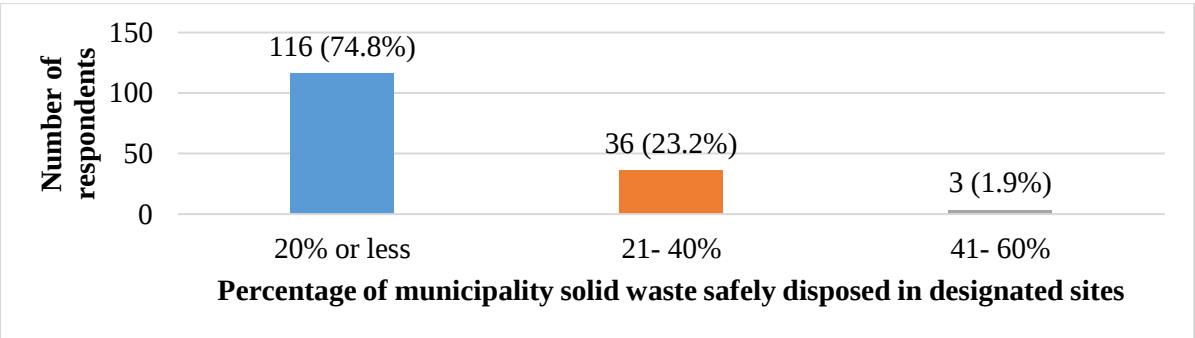
Figure 10: Percentage of Municipality Solid Waste Collected on a Regular Basis



Source: Research Data (2022)

The study also examined the percentage of solid waste in Wajir Municipality that was safely disposed of in designated well-managed dumping sites. The outcomes as provided in Figure 11 uncovered that 116 (74.8%) of the participants asserted that 20% or less of the solid waste in this municipality was safely disposed of, 36 (23.2%) of them indicated 21 to 40% while 3 (1.9%) of the respondents noted that 41 to 60% of solid waste in Wajir Municipality was safely disposed of in designated areas. This finding suggested that most of the solid waste generated in Wajir Municipality was not safely disposed of in designated areas and this can be linked to the observation that the municipality lacked adequate land that was suitable for use as dumpsites/landfills.

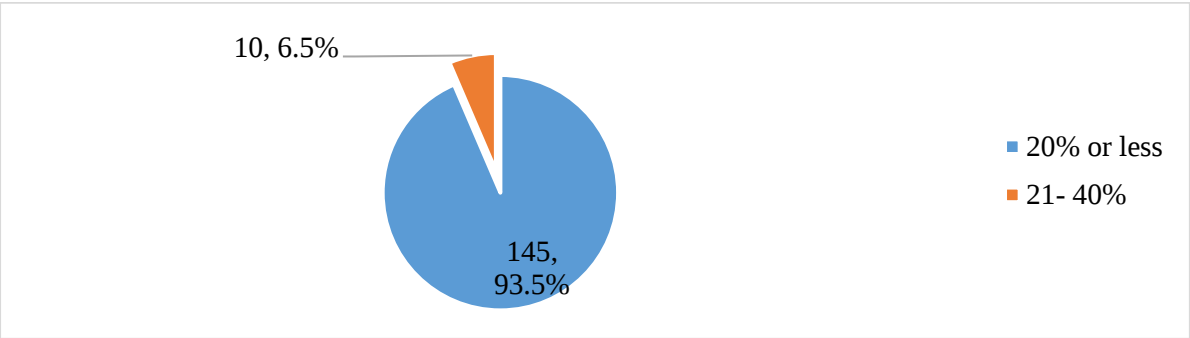
Figure 11: Percentage of MSW Safely Disposed of in Designated Dumping Sites



Source: Research Data (2022)

All the respondents indicated that 20% or less of the Wajir Municipality solid waste was treated.

Figure 12: Percentage of Wajir Municipality Solid Waste is Reused or Recycled

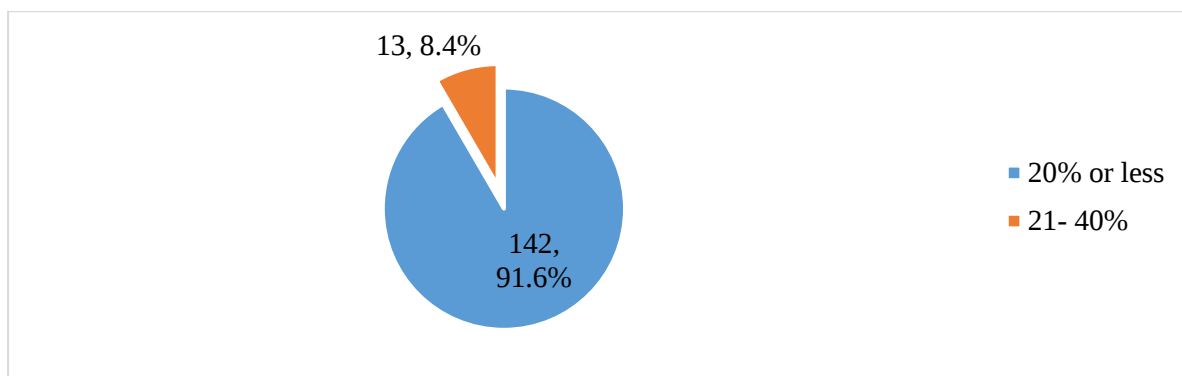


Source: Research Data (2022)

As exhibited in Figure 12, the most of participants, 145 (93.5%) in number, reported that 20% or less of the solid waste in Wajir Municipality was reused. The rest of the respondents, 10 (6.5%) in number, indicated that 21 to 40% of this municipality's solid waste was reused or recycled. These findings meant that solid waste reuse or recycling in Wajir Municipality was poor which can be attributed to either lack of knowledge on how to do so or lack of adequate facilities/tools/equipment that can be used in solid waste recycling.

Further analysis as revealed by the outcomes displayed in Figure 13 uncovered that 142 (91.6%) of the participants reported that the amount of solid waste generated in Wajir Municipality had reduced by 20% or less while 13 (8.45) indicated 21 to 40%. These findings revealed the continued generation of high amounts of solid waste in Wajir Municipality despite the challenge of inadequate solid waste management services in the municipality.

Figure 13: Reduction of Solid Waste Generated in Wajir Municipality



Source: Research Data (2022)

4.2 Cross-Tabulation Analysis

Table 1 contains cross-tabulation analysis results of stakeholder involvement and adequacy of SWM in Wajir Municipality. The findings revealed that the number of times in a year the municipality held consultative meetings with key stakeholders and also stakeholder education and awareness campaigns were significantly associated with adequacy of solid waste management in Wajir Municipality as demonstrated by ($\chi^2=60.215$, $p=0.000$) and ($\chi^2=23.001$, $p=0.000$) respectively. There was also a significant association between the frequency of collective efforts by relevant stakeholders towards achieving specified policy objectives on SWM and the adequacy of SWM in Wajir Municipality given ($\chi^2=4.197$, $p=0.040$) that was computed. The study further established that the provision of prompt feedback to stakeholders to enable them to take part in addressing key policy problem areas in SWM was significantly associated with the adequacy of SWM in Wajir Municipality as depicted by ($\chi^2=27.117$, $p=0.000$).

The findings revealed that the number of municipality employees who rated SWM in Wajir Municipality as adequate was higher where the municipality held dialogue and consultative meetings with key stakeholders and also stakeholder education and awareness campaigns 6 to 10 times a year compared to when these initiatives were held 1 to 5 times yearly. It was also noted that the number of employees who indicated that SWM in Wajir Municipality was adequate was higher where collective efforts by relevant stakeholders towards achieving specified policy objectives on SWM were undertaken once in a while when compared to the case where this was rarely done. Further assessment also revealed that the number of employees who found SWM in Wajir Municipality adequate was higher where the municipality

management provided prompt feedback to the stakeholders to enable them to take part in addressing key policy problem areas in SWM than where such feedback was not provided.

Table 1: Cross Tabulation Analysis between Stakeholder Involvement and Adequacy of SWM in Wajir Municipality

Stakeholder Involvement	Category	Adequacy of SWM			χ^2	p-value
		Inadequate n; (%)	Adequate n; (%)	Total n; (%)		
Number of times in a year the municipality holds dialogue and consultative meetings with key stakeholders	1 to 5	107; 84.3	20; 15.7	127; 81.9	60.215	0.000
	6 to 10	3; 10.7	25; 89.3	28; 18.1		
	Total	110; 71.0	45; 29.0	155; 100.0		
Number of times in a year the municipality holds stakeholder education and awareness campaigns	1 to 5	52; 94.5	3; 5.5	55; 35.5	23.001	0.000
	6 to 10	58; 58.0	42; 42.0	100; 64.5		
	Total	110; 71.0	45; 29.0	155; 100.0		
Frequency of collective efforts by relevant stakeholders towards achieving specified policy objectives on SWM	Rarely	22; 88.0	3; 12.0	25; 16.1	4.197	0.040
	Once in a while	88; 67.7	42; 32.3	130; 83.9		
	Total	110; 71.0	45; 29.0	155; 100.0		
Provision of prompt feedback to stakeholders to enable them to take part in addressing key policy problem areas in SWM	No	102; 79.7	26; 20.3	128; 82.6	27.117	0.000
	Yes	8; 29.6	19; 70.4	27; 17.4		
	Total	110; 71.0	45; 29.0	155; 100.0		

Source: Research Data (2022)

4.3 Regression Analysis

Stakeholder involvement in the implementation of solid waste management policies in Wajir Municipality was another goal of the study. Bivariate binary logistic regression analysis was undertaken. The model summary outcomes exhibited in Table 2 uncovered that the variables involved in this model namely number of times in a year the municipality held a dialogue and consultative meetings with key stakeholders and also conducted stakeholder education and awareness campaigns, frequency of collective efforts by relevant stakeholders towards achieving specified policy objectives on SWM and provision of prompt feedback to stakeholders to enable them to take part in addressing key policy problem areas in SWM explained 63.1% of the variance in the implementation of SWM solid waste management policies in Wajir Municipality as supported by Nagelkerke R Square equal to 0.631. The first categories of each variable were used as a reference point.

Table 2: Model Summary Results for Stakeholder Involvement

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	96.364a	0.442	0.631
a Estimation terminated at iteration number 7 because parameter estimates changed by less than .001.			

Source: Research Data (2022)

From Table 3, a positive significant relationship existed between a number of times in a year the municipality management held a dialogue and consultative meetings with key stakeholders and implementation of solid waste management policies in Wajir Municipality (Wald=22.594, $p=0.000$, $p<0.05$). The outcomes uncovered that the odds of improved implementation of these policies was 27.987 times higher where the municipality management held such meetings 6 to 10 times a year when compared to where the meetings were organized 1 to 5 times a year. The study also found that the number of times in a year the municipality held stakeholder education and awareness campaigns was positively and significantly related with the implementation of SWM policies in Wajir Municipality as illustrated by (Wald=7.339, $p=0.007$, $p<0.05$). According to these findings, the odds of enhanced execution of these policies were 9.264 times higher where the stakeholder education and awareness campaigns were held 6 to 10 times a year compared to where the campaigns were held 1 to 5 times a year. The survey outcomes on the contrary revealed that there was no significant relationship between the frequency of collective efforts by relevant stakeholders towards achieving specified policy objectives on SWM and the implementation of SWM policies in Wajir Municipality as shown by (Wald=2.315, $p=0.128$, $p>0.05$). The survey established that though collective efforts by relevant stakeholders towards achieving specified policy objectives on SWM once in a while positively affected the implementation of the said policies, the effect was insignificant. The study further established that the provision of prompt feedback to stakeholders to enable them to take part in addressing key policy problem areas in SWM was positively and significantly related to the implementation of SWM policies in Wajir Municipality given (Wald=15.962, $p=0.000$, $p<0.05$). The outcomes uncovered that the odds of improved execution of these policies were 13.574 times where stakeholders were provided with such feedback than where such feedback was not provided.

Table 3: Regression Estimates for Stakeholder Involvement

	Variables in the Equation	B	S.E.	Wald	df	Sig.	Exp(B)
Step 1a	Number of times in a year the municipality holds dialogue and consultative meetings with key stakeholders (1)	3.332	0.701	22.594	1	0.000	27.987
	Number of times in a year the municipality holds stakeholder education and awareness campaigns (1)	2.226	0.822	7.339	1	0.007	9.264
	Frequency of collective efforts by relevant stakeholders towards achieving specified policy objectives on SWM (1)	2.165	1.423	2.315	1	0.128	8.718
	Provision of prompt feedback to stakeholders to enable them to take	2.608	0.653	15.962	1	0.000	13.574

part in addressing key policy
problem areas in SWM (1)

Constant -13.641 3.459 15.556 1 0.000 0.000

a Variable(s) entered on step 1: Number of times in a year the municipality holds dialogue and consultative meetings with key stakeholders, Number of times in a year the municipality holds stakeholder education and awareness campaigns, Frequency of collective efforts by relevant stakeholders towards achieving specified policy objectives on SWM, Provision of prompt feedback to stakeholders to enable them to take part in addressing key policy problem areas in SWM.

Source: Research Data (2022)

4.4 Discussion of the Findings

The study discovered that while the Wajir Municipality management valued stakeholder involvement in the execution of SWM functions, dialogue/consultative meetings with stakeholders, stakeholder education and awareness campaigns, collective decision-making on SWM and information/feedback sharing to enable stakeholders take part in addressing problem areas in SWM had not been optimized. Inadequate stakeholder involvement in municipality SWM matters was also reported in the studies undertaken by Abas and Wee (2014), Dewi (2014), Mberu and Gatura (2018), Shehu, Bashir, and Mubi (2018) and Yukalang, Clarke, and Ross (2018) in Malaysia, Indonesia, Nigeria and Thailand respectively. Alam (2016) emphasized that local authorities by themselves could not ensure adequate solid waste management in urban areas and therefore, the involvement of different stakeholders particularly local communities needed to be guaranteed by providing them with information, educating them, and also communicating with them to improve their awareness of suitable SWM practices.

Stakeholder involvement was found to have a positive significant effect on the implementation of solid waste management policies in Wajir Municipality. This finding was consistent with the observation by Wilson, Velis, and Rodic (2013) that governance and implementation of SWM policies involved the coordination and input of several stakeholders tasked with diverse duties and responsibilities. The finding was also in tandem with Dewi (2014) view that when executing SWM policies, interactions and proper coordination between local authorities and their stakeholders influenced the achievement of set policy targets.

5.0 Conclusion

The study concluded that Wajir Municipality management to some extent engaged various stakeholders in different SWM functions by holding a number of dialogue and consultative meetings with them, conducting several stakeholder education and awareness campaigns, and once in a while supporting collective efforts towards the achievement of specified policy objectives on SWM.

The study also concluded that stakeholder involvement and in particular, holding dialogue and consultative meetings with key SWM stakeholders, holding stakeholder education and awareness campaigns on SWM, and providing stakeholders with prompt feedback to enable them take part in addressing key policy problem areas in SWM significantly contributed to enhanced implementation of SWM policies in Wajir Municipality.

6.0 Recommendations

The study recommends that dialogue and consultative meetings with key stakeholders on ideal solutions to SWM challenges organized by the municipality management should be frequent. The study also recommends that the municipality management should increase and sustain

stakeholder education and awareness campaigns on SWM in the municipality by, for instance, setting aside the needed resources to support such campaigns.

To make collective efforts by relevant stakeholders towards the achievement of specified policy objectives on SWM fruitful, the municipality management should make such initiatives regular rather than a once in a while occurrence. By exploiting commonly used communication and feedback channels, the municipality management should provide prompt feedback to stakeholders to allow them take part in addressing the key policy problem areas in SWM in the municipality.

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