

# **THE ROLE OF INSTITUTIONS IN SWM IN NAIROBI COUNTY USING ENVIRONMENTAL SWM POLICY FRAMEWORKS FOR SUSTAINABLE WASTE MANAGEMENT**

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## **ABSTRACT**

Inadequate solid waste management mechanisms in many cities are a major drain on the economy with many health problems and environmental impacts experienced. Institutions such as municipal authorities and policymakers need to create synergy to upscale their efforts in SWM in cities. Sustainable waste management provides a comprehensive inter-disciplinary framework for addressing the problems of managing urban solid waste, in the resource constrained Nairobi City Council which will provide a network for remedial actions and enhance the quality of services being rendered. Despite many SWM policies in place, institutions lack the capacity, financial and technology to handle the increasing waste generation in Nairobi city. The study was guided by this objective; to

analyze the existing policy framework on solid waste management and its effectiveness in addressing SWM in Nairobi City County. The study adopted a descriptive research design, interrogating the SWM policy frameworks in place and how the institutions mandated integrated to yield sustainable management of solid waste. This paper highlights the role of institutions and effective SWM policies where involvement and participation of all the stakeholders such as the waste generators, waste processors, formal and informal agencies, non-governmental organizations and financing institutions are pivotal to the sustainable waste management.

**Key Words:** *solid waste, environmental policies, policy frameworks, institutions, Nairobi*

## **INTRODUCTION**

In Kenya, the challenge of Solid Waste Management is an increasing hard reality to deal with (Gakungu, 2011). The SWM collection systems are inefficient and disposal systems have least environmental friendliness where 30 to 40 per cent of all solid waste generated in urban areas is uncollected and less than half of the population being served (Otieno, 2010). With the urban population in Kenya estimated to be growing at a rate higher than that of the country's general population growth rate, waste generation shall be a major challenge (Ngoc and Schnitzer, 2009; NEMA, 2014). Kenya's waste generation has been accelerating due to the rapid urbanization the current amount (about 4 million tones/year) generated is expected to double by 2030 (Njoroge et al., 2014). However, the rise in waste generation has not been accompanied by an equivalent increase in the capacity of the relevant urban authorities to deal with this challenge of Solid Waste Management (SWM) (Gakungu, 2012).

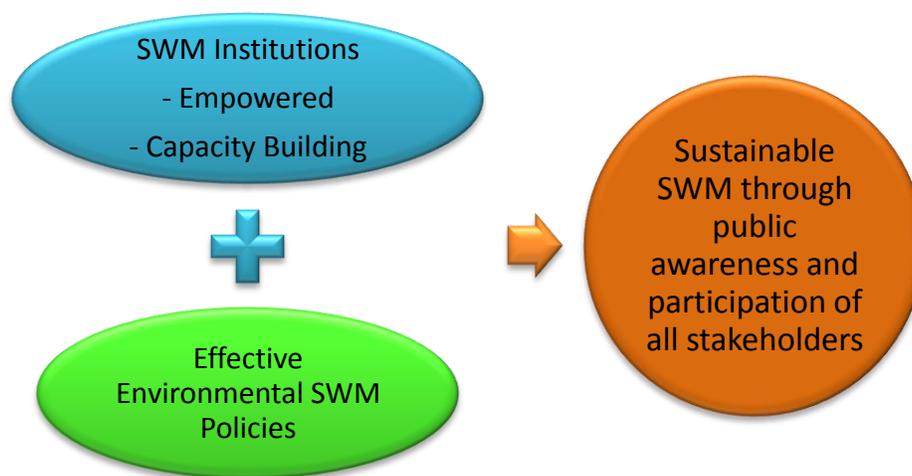
A country's development agenda should focus on the needs of present generations should be met without compromising the ability of the future generations to meet their needs which is also applicable to SWM (UNEP, 2010). This can be attained by providing an avenue for integrating SWM with the environment through socioeconomic planning and management which ultimately is increasing environmental concerns and the emphasis on material and energy recovery are

gradually changing the orientation of solid waste management and planning (Marshall and Farahbakhsh, 2013).

In general solid waste management policies are broad and looks more integrating than specific ones, the institutional and implementation mechanism proposed by these policies are more centralized (Asase et al., 2009). Consequently, in response to the consistently increasing challenge of solid waste management, several policy frameworks are formulated and enacted to address it (Murad et al., 2012). Solid waste management and its effects is cross cutting and multi-sectoral therefore, to effectively address the challenge of solid waste management, policy integration among and within the various sectors and stakeholders is essential (Marshall and Farahbakhsh, 2013). Policy integration concerns the management of cross-cutting issues in policy-making that transcend the boundaries of established policy fields, and which do not correspond to the institutional responsibilities of individual departments (Persson, 2004). Policy integration also refers to management of policy responsibility within a single organization or sector where integration encompasses both horizontal sectoral integration (between different departments and/or professions in public authorities) and vertical inter-governmental integration in policy-making (between different tiers of government), or combinations of both (Persson, 2004; Tilahun et al., 2016). Notably the sector-specific and embedded solid waste management policies are coherent with the overall policy document, but they lack mechanisms of implementation within the same SWM policy framework. Major gaps exist in stipulating clear policy strategies and implementation mechanisms (Gakungu, 2011; Njoroge et al., 2014). Corresponding to the Constitution of Kenya, the National Environment Policy outlines responsibilities of what the government entail and what the government will do in relation to creating a favorable ground for protecting the environment (NEP, 2013). The intention of National Solid Waste Management strategy is to address a core area of the National environment policy, which aims to establish a platform for action between stakeholders to systematically improve SWM (NEMA, 2014). In retrospect the integration between the Environment Policy and the Solid Waste Management Strategy is a vertical one where the policy outlines the core issues and the strategy formulated however, the national SWM strategy has a national scope focused on flagship SWM projects in five main cities in Kenya. Despite the presence of legislative and institutional frameworks governing solid waste management, there is so much waste as a result of indiscriminate littering and illegal dumpsites, illustrating lack of coordination and enforcement of the various laws ( Njoroge et al., 2014 ).

The role of various SWM institutions in most countries lie in local authority and devolved units responsible for waste collection, resource recovery, recycling and disposal within their jurisdiction in Kenya (AfDB, 2015). The institutions are therefore in a position to introduce the concepts of clean environment by ensuring good practices, strive to conduct their activities and use of resources in a manner that develops environmental awareness and fosters responsible solid waste management (Marshall and Farahbakhsh, 2013; Ngau, 2009). Environmental awareness and knowledge about SWM had a positive effect on recycling attitude though knowledge of

recycling still lacking the required depth (Aini et al., 2002). Thus, waste managers need to take steps to help align the information on SWM presented to the public to ensure sustainability. Growing costs, shortage of funds, institutional deficiencies, indiscipline among the work force, lack of trained personnel and political pressure are making the situation worse as time goes by (Asnani, 1996; Joseph, 2006). A study by (Kasozi and Von Blottnitz, 2010) on solid waste management in Nairobi (2010) found that there were no monitoring mechanisms on the enforcement of the environmental Laws which include SWM policies which emphasized on the need for sanctions and penalties of waste mismanagement. This paper seeks to illustrate the critical role of institutions and effective SWM environmental policies have an effect on sustainable solid waste management in Nairobi County.



**Figure 1: Conceptual Framework**

## **RESEARCH MATERIALS AND METHODS**

The study approach was based on the theoretical framework of institutional analysis and capacity building theories where analytical and prescriptive benefits are crucial in empowering the society in complying with environmental policies in solid waste management (Cord, 2009). A conceptual framework (Fig. 1) was utilized to design the study where empowered SWM institutions and effective SWM environmental policies are dependent on creating a sustainable SWM through public awareness and stakeholders' participation and engagement.

Data was collected in Nairobi being the capital city of Kenya and which formulates policies on SWM for the entire country where also policy regulators and implementers are domiciled that. Surveys were conducted using semi structured questionnaires and key informant interviews. The study adopted a mixed design approach with a target population of 385 households derived from a sampling formula that give equal representation of the samples. Data was collected by administration of questionnaires supplemented by interviews and Focus Group Discussions. Data

was analyzed quantitatively using SPSS and qualitatively based on the emerging themes (Agarwal, 1991).

## **RESEARCH RESULTS**

### **Effectiveness Environmental policies in Solid Waste Management**

**Table 1: The enforcement of environmental policies on solid waste management in Nairobi City County**

<b>Response</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
Agree	9	0	9	60	12	72	38	11	49
Disagree	26	4	30	47	4	51	61	24	85
Strongly Agree	0	1	1	6	3	9	1	1	2
Strongly Disagree	16	2	18	6	0	6	34	18	49
<b>Total</b>	<b>51</b>	<b>7</b>	<b>58</b>	<b>119</b>	<b>19</b>	<b>138</b>	<b>134</b>	<b>54</b>	<b>188</b>

62% of the respondents disagreed that enforcement of environmental policies on SWM in NCC has not been carried out properly, as opposed to 36% who agreed illustrating a gap in the implementation of the set policies. Most of the respondents who disagreed that there has been effective implementation are members of the lower class zone – Kibra, at 35% unlike Lavington and Embakasi. The focus group discussions with University of Nairobi Chiromo campus students and CBOs at Kibra, key informant interviews with private service providers, hotel institutions of middle and upper categories and Resident Associations of Lavington agreed that implementation of policies is not effective as stipulated .

**Table 2: Impact of SWM policies on the Environmental and Personal Health**

<b>Response</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
Strongly disagree	0	0	0	0	0	0	1	1	2
Disagree	1	0	1	1	0	1	6	3	9
Agree	9	0	9	83	13	96	75	32	107
Strongly agree	41	7	48	35	6	41	52	18	71
<b>Total</b>	<b>51</b>	<b>7</b>	<b>58</b>	<b>119</b>	<b>19</b>	<b>138</b>	<b>134</b>	<b>54</b>	<b>188</b>

Majority of the respondents at 55% agreed that the environmental conditions predisposed to proper SWM affect people’s health as opposed to 42% who disagreed. This implies that the effectiveness of the policies is in enforcement and implementation mechanisms that should be consistently adhered to.

**Effectiveness of institutions in SWM policies implementation in Nairobi County**

**Table 3: The Nairobi City County as an institution has conducted SWM Public Awareness**

<b>Response</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
No	11	0	11	74	13	87	105	51	156
Yes	40	7	47	45	6	51	29	3	32
<b>Total</b>	<b>51</b>	<b>7</b>	<b>58</b>	<b>119</b>	<b>19</b>	<b>138</b>	<b>134</b>	<b>54</b>	<b>188</b>

65.9% of the respondents concur that public awareness needs to be conducted more on SWM as a result of lack of capacity, corruption and negligent NCC officers unlike 34.1% who expressed satisfaction with the Nairobi City County’s public awareness.

**Table 4: Respondent’s Attitudes to SWM from Public Awareness**

<b>Response</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
No	6	0	6	69	13	82	88	29	117
Yes	45	7	52	50	6	56	46	25	71
<b>Total</b>	<b>51</b>	<b>7</b>	<b>58</b>	<b>119</b>	<b>19</b>	<b>138</b>	<b>134</b>	<b>54</b>	<b>188</b>

53% of the respondents agreed that would not keep waste until they find a litter bin since the NCC has no clearly labelled litter bins at the right places while 46% indicated that they would keep the litter and disposed it at the right place where they would find a litter bin.

**Impacts of implementation of SWM policies in Nairobi County**

**Table 5: The Impacts of the SWM Policies implementation**

<b>Response</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
No problem	0	0	0	0	0	0	3	2	5
Problem	5	0	5	30	7	37	32	17	49
Slight Problem	0	0	0	6	1	7	3	1	4
Serious Problem	46	7	53	83	11	94	96	34	130
<b>Total</b>	<b>51</b>	<b>7</b>	<b>58</b>	<b>119</b>	<b>19</b>	<b>138</b>	<b>134</b>	<b>54</b>	<b>188</b>

Majority of the respondents, at 72% were concerned about an overloaded waste disposal truck scattering waste on the road where they agreed it was a serious impact of lack of implementation of the SWM policies. While 28% of the respondents stated they would be bothered with waste disposal truck littering because NCC should be have measures to deal with them. policies.

**Table 6: Respondent’s perceived benefits of effective SWM policies**

<b>Response</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
Strongly disagree	0	0	0	0	0	0	3	1	4
Disagree	0	0	0	1	0	1	6	4	10
Agree	36	2	38	61	11	72	78	37	115
Strongly agree	15	5	20	57	8	65	47	12	59
<b>Total</b>	<b>51</b>	<b>7</b>	<b>58</b>	<b>119</b>	<b>19</b>	<b>138</b>	<b>134</b>	<b>54</b>	<b>188</b>

58% of the respondents concurred that waste is a resource that can be harnessed to create wealth, employment, and reduce pollution of the environment, with effective implementation of SWM policies unlike the 42% of the respondents who indicated that there was no wealth creation from waste generated. The perceived benefits ranged from a clean environment to employment opportunities for the growing number of youth populations in the city.

**DISCUSSION**

The data from the results supports the respondent’s views that institutions on SWM are enhanced by effective implementation of environmental policies on SWM (Gakungu, 2012; Ngau, 2009). The data illustrates the critical role institutions have in terms of public awareness on SWM (UNEP, 2015; Marshall and Farahbakhsh, 2013). As previously noted by Njoroge et al (2014)

Majority of the respondents seemed to be aware of the existence of solid waste management regulations and policies but are neither empowered to enforce the policies and regulations using SWM Policy frameworks. This data, as supported by other previous authors also suggests that SWM policies when implemented and combined with strong enforcement measures through empowered institutions and stakeholders, SWM becomes sustainable and profitable (Aini et al., 2002; Joseph, 2006; UNEP, 2015). These SWM Policy frameworks in Kenya when implemented strategically could strengthen the weak links between various stakeholders and enhance the public awareness on SWM as is supported by the data that shows respondents agreed there were benefits attributed(Aini et al., 2002) . Consequently, majority of the respondents agreed that empowered institutions are vital in successful implementation of SWM policies which would enhance waste free and clean environment. The data is suggestive of the fact that once institutions/policies put in place can upscale the SWM sustainability and strengthening the public awareness as a holistic approach towards solid waste management, the same will result in wealth creation and education on solid waste management.

The data however elucidates optimism in empowered SWM institutions and effective SWM environmental policies application in Nairobi County which can be replicated in other counties too thereby sustainable management of Solid waste (Troschinetz, 2009; Gakungu, 2012).

## **CONCLUSIONS AND RECOMMENDATIONS**

The study explicates an analysis of integration of SWM policies in Kenya which shows that the extent of integration differs across different dimensions of policy development, implementation and enforcement where at macro-level, integration of SWM policies look sound and practical however coordination mechanism for implementation is not comprehensive. The study recommends that there is need for a clear coordination mechanism of policy making, implementation and evaluation and create synergy among the stakeholders in their implementation as well as enhancing institutional capacity (infrastructural, financial and human resources) of key stakeholders in SWM for effective implementation of policies.

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