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Solid Waste Management Policies in Urban Africa: Gender and Life-course Considerations in Nairobi and Mombasa

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Abstract

Building on available evidence that there are differences of exposure to solid waste among males and females at different stages of the life-course (children, youth, adults and older persons), it follows that effective SWM policies need to recognize such variations, as a prelude to rolling out programmes to address associated socio-economic and health risks. However, this logical scenario does not seem to be the case. In this paper, we use analytical review methodology to examine integrated environmental management and sector specific policies in Nairobi and Mombasa, Kenya's two biggest cities, to highlight the extent to which existing policies and practices cover the differential challenges of exposure to solid waste and associated health challenges for males and females across the life-course. We complemented the review with an analysis of primary qualitative data. We find that apart from one municipal policy and the national vision 2030, which underscores the importance of including women and young people in waste management, 16 other policies reviewed are generally silent on gender and life-course issues. The results of the qualitative data revealed a clear policy implementation and enforcement challenges in the Kenyan waste management sector, and that policy makers and community members do not recognise scavengers, who are important actors in the SWM chain. Beyond the little focus on gender and life-course specific challenges, the general lag in policy implementation and enforcement of regulations will still hinder the emergence of an effective SWM system out of the best policy frameworks. The forgoing underscore both policy and implementation gaps, which need to be filled, if policies will potentially engender SWM practices that will be relevant and effective in protecting the health of the most vulnerable in urban Africa.

Keywords: Solid waste management, gender, life-course, policy, Kenya

1.0 Introduction

Municipal solid waste generation is an issue of increasing worldwide concern. An estimated 11.2 billion tons of solid waste is collected worldwide every year. The increasing volume and complexity of waste associated with the modern economy and rapid urbanization is posing a serious risk to ecosystems and human health (UNEP, 2009). Correspondingly, the management of the increasing volumes of municipal solid waste has become a serious problem for government departments, pollution control agencies, regulatory bodies and the general public, especially in the developing countries (Das & Bhattacharyya, 2014). Consequently, over the years, there have been deliberate policies and legislative frameworks by governments in both high income and low and middle income economies to address the overwhelming increase in municipal solid waste. A case in point is the Hong Kong's policy framework (Environmental Protection Department, 2005), which describes the urgency of growing municipal solid waste problems in the country and the strategies on how to address them. Adapting the influential European Commission's waste hierarchy model (European commission, 2008), the Environmental Protection Department of Hong Kong developed effective policy tools in the waste hierarchy to induce appropriate actions to curtail the solid waste menace in the country. The Figure 1 below explains the policy tools as they relate to the waste hierarchy and SWM for that matter.

Fig 1. The Role of Policy Tools and Support Measures (adapted from European commission Waste Framework Directive by Hong Kong's Environmental Protection Department)



In sub-Saharan Africa (SSA), quite a number of policies and legislative instruments on SWM do exist (Palczynski & Scotia, 2002; Van Dijk & Oduro-Kwarteng, 2007). However, the fundamental question

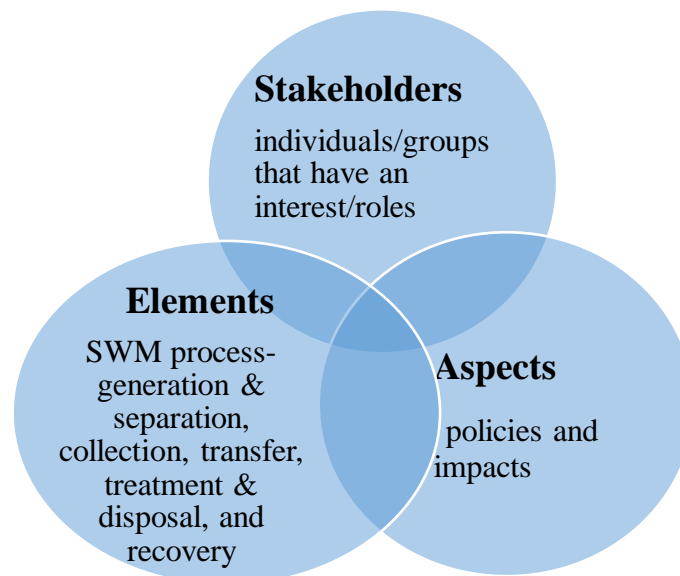
is whether gender and life-course, important ingredients for effective SWM have been incorporated into these policies and legislative instruments? Addressing this question has become important following deleterious gender and life-course issues identified in vulnerability of exposure to poor SWM and associated health risks, as well as evidence that lack of policy direction and specificity on gender and life-course can result in ineffective and inefficient SWM outcomes (Creighton et al. 2008; OECD, 1998; UNCHS, 2000). Indeed, several countries in SSA have signed into international statutes, protocols and policies focusing on gender and life-course in relation to the environment. In particular, Kenya, is a signatory to a wide range of regional and international statutes, protocols and policies, which highlight the importance of incorporating gender and life-course issues into environmental planning and policies. Agenda 21 of the United Nations Conference on Environment and Development, advocates for the involvement of women and youth of both gender in decision making processes (UNDESA, 1992). The UN Fourth World Conference on Women in Beijing also clearly states the importance of involving women in environmental decision making at all levels, and the need to integrate gender concerns and perspectives in policies and programs for sustainable development (UN, 1995). The Maputo Protocol on the Rights of Women in Africa, which was adopted by the African Union (AU), among other things, guarantees the right of women to healthy and sustainable environment and development (AU, 2003; Lawyers Circle and Oxfam, 2014). Nevertheless, as to whether the acceptance of these international policies and protocols is reflected in the country specific policies and legislative instruments remains unclear. The present study therefore sets out to investigate the extent to which existing policies and legislative instruments cover the differential challenges of exposure to solid waste, consequent practices and associated health challenges for males and females at different stages of the life-course in Kenya.

The rest of the paper is presented in five sections. In the immediate sections, we present a theoretical framework, and an overview of SWM, gender and life-course nexus in low and middle income countries (LMICs) to help an appreciation of the SWM policies and practices in these settings. We discuss the methods used in the review and the primary data collection and the local settings of our focus in section three and proceed in section four to focus on gender and life-course perspectives in relation to SWM policies and practices in Kenya generally, and Nairobi and Mombasa in particular, identifying key provisions, gaps and opportunities. Also, in this section, the results of the qualitative data analysis are presented as a complement to the review. The discussion and concluding sections tie the findings together, highlighting policy and programmatic options for consideration.

2.0 Theoretical framework

This study used the Integrated Sustainable Waste Management (ISWM) Model (Hoorweg & Bhada-Tata, 2012) as theoretical framework to guide the analysis of SWM policies in Kenya. The ISWM is a model that allows the study of complex and multi-dimensional systems in an integral way. Consequently, various scholars and policy makers have proposed the use of ISWM model to understand and solve SWM problems in low income countries (Guerrero, Maas, & Hogland, 2013; Hoorweg & Bhada-Tata, 2012; Marshall & Farahbakhsh, 2013; UNEP, 2009). The model acknowledges the importance of three dimensions when analysing, developing or changing a waste management system. The dimensions are: the stakeholders that have an interest in solid waste management, the elements or stages of the movement or flow of materials from the generation points towards treatment and final disposal and the aspects or “lenses” through which the system is analysed (Müller, et al., 2002; Müller & Scheinberg, 2002; Scheinberg et al., 2011; Scheinberg, et al., 2010; Guerrero et al., 2013; Hoorweg & Bhada-Tata, 2012). Figure 1 below presents an integrated framework for sustainable solid waste management.

Figure 2: Integrated Sustainable Solid Waste Management Framework



Adapted from Hoorweg & Bhada-Tata (2012)

Building on the ISWM model, this study focuses on investigating the individuals and stakeholders' action/behaviour, and policies and regulations that influence the elements of solid waste management systems in the cities of focus. In particular, we focus on the extent to which legal and institutional frameworks for SWM address the issues of gender and life-course.

3.0 Literature review: SWM, gender roles and life-course perspectives in LMICs

There is considerable consensus that the physical environment is not gender neutral since the interaction of men and women with the environment and their attitudes towards health and environment are generally different (Organization for Security and Co-operation in Europe, 2009). Similarly, solid waste in itself is gendered and the very definition of what is waste and what is not, is influenced by the age, gender and social status of the person making the judgement (Kadfak, 2011; Scheinberg et al., 1999). Thus, women and men define waste differently, their uses and understanding as to where waste is disposed (Adebo & Ajewole, 2012; Jerie, 2011; Scheinberg et al., 1999). A separate-sex mapping exercise in Hungary, resulted in the maps drawn by the men's group showing more sites with scrap metals from abandoned cars, tires and farm-equipment and more sites with building and construction wastes, while those drawn by women showed more dumping places for household wastes, missing some of the sites mapped by men. In this case, children were the only group who seemed to know all the dumping-places, although they could not always say what kind of waste was found in specific dumpsites (Scheinberg et al., 1999).

Additionally, men and women play different roles in the waste management process, especially at the household level (Adebo & Ajewole, 2012). Women have the sole responsibility of managing household waste with assistance of their children (both male and female), partly because they are the managers of the home and consequently the key generators of household waste (Fredericks, 2008; Gani et al., 2012; Organization for Security and Co-operation in Europe, 2009; Water et al., 2000). Outside the home, both men and women work in SWM as sweepers, domestic workers, and waste pickers. Nonetheless, women tend to have a subordinate status when it comes to paid waste management activities, which not only affect their access and control of resources but also exposes them to greater health and environmental risks than men (Jerie, 2011). For example, recycling enterprises are usually owned by men, who employ women and children to work for them. Similarly, most supervisory and managerial posts in municipal and waste collection firms are dominated by men (Muhammad & Manu, 2013; Water et al., 2000). Waste materials are also gendered. Studies in Ghana and Nigeria found that materials which are considered being of higher value are often the preserve of men, while women mostly access lower value and dirtiest materials, usually from dumpsites, which largely contain organic and inert waste and sources of higher health risks (Gani et al., 2012; Kadfak, 2011; Jerie, 2011).

A number of other studies across LMICs have largely confirmed the gender and life-course influences in participation of individuals in SWM (Guerrero et al. 2013; Jerie, 2011; Muhammad & Manu, 2013). Evidence from Kaduna, Nigeria and Latin American cities of Lima, Cochabamba, Sao Paulo and Montevideo reveal clear gender and life-course distinction in the way men, women and children are involved in waste management, although there are variations from place to place (Gunsilius 2011). Children often work with their parents, although they sometimes work independently for themselves and their families. Children are usually involved in recovering, guarding, and sorting and cleaning materials (Gunsilius 2011). Women of all ages also participate in different SWM activities depending on the region. In some places, women are waste pickers and itinerant waste buyers while in other places they are engaged in sorting and pre-processing of the waste collected by their male counterparts.

Although SWM workers and waste pickers are usually exposed to different health risks (Cointreau, 2006), the age of a person plays a crucial role in determining the level of exposure and vulnerability to health and environmental hazards emanating from waste (Hunt, 1996; Longe et al., 2009). For instance, children are more vulnerable to health risks associated with SWM than adults (Hunt, 1996; Longe et al., 2009). This is probably because they have a lower level of awareness of risks and limited experience and knowledge in waste handling. Consequently, children may expose themselves unknowingly to dangerous material that adults are likely to avoid (Longe et al., 2009). The severity of effects of solid waste materials on human health also varies with age (Longe et al., 2009). For example, the effects of toxins from solid waste are found to be more severe in children than adults. This is particularly so because the metabolic systems of children are less developed and may not therefore be able to detoxify and remove solid waste associated toxins (Cointreau, 2006; Longe et al., 2009). Similarly, airborne hazards like gases may affect children more than adults. Also, because of the youthfulness of their skin, children tend to be more vulnerable in terms of penetration of chemicals into their bodies and its consequential effects on their health (Longe et al., 2009). There is also substantial evidence that children may have developmental and skeletal problems as a result of exposure to toxic solid waste (Cointreau, 2006; Longe et al., 2009).

Beyond health risks, there are social risks associated with SWM, especially for young children. Children who are involved in waste picking may miss the opportunity to attend school (Longe et al.,

2009). This may jeopardise their successful transition to adulthood, such as their ability to earn a decent income in adulthood, which may in turn affect how they will cater for their offspring. These intergenerational effects of poor SWM are visible across cities in resource constrained settings. It is not uncommon for instance, to see children and their parents, including grandparents engaging in waste picking in Africa and Kenya for that matter.

Different studies on life-course and SWM practices suggest that the involvement of people of different ages in SWM varies from one place to another. Cointreau (2006), observed that waste pickers in open dumps in developing countries consist of a significant proportion of pregnant women and children. This corroborates findings from a study in India which revealed that most waste pickers were women and children from lower castes (Hunt, 1996). A study in Tafila region, Jordan also highlights the involvement of children in SWM (Aljaradin & Persson, 2012). The preceding discussion goes to suggest that children involvement in SWM cuts across most regions in the developing world.

Despite evidence of gender and life-course dimensions in SWM across LMICs, they are generally given marginal attention in SWM policies and strategies. A study of Bauchi in Nigeria, for instance, shows that even though women dominate waste generation, storage and collection in the area, they are not integrated into the solid waste management system (Gani et al., 2012). In the subsequent sections of our review and analysis, we examine the extent to which SWM policies addressed the gender and life-course issues, and the effectiveness of the implementation of these policies in Kenya, and Nairobi and Mombasa for that matter.

4.0 Methods

4.1 Review of policy documents and frameworks

Review approach

An analytical review methodology was used to examine integrated environmental management policies and sector specific policies in relation to SWM. We first conducted a detailed search of existing policy documents on SWM in Kenya, Nairobi and Mombasa from public domain. A total of 45 documents were retrieved.

Selections of policy documents

After retrieval, we assessed the documents we found to determine their relevance. We included current policy documents that focus on SWM at national level, and in Nairobi and Mombasa. Afterwards, we reviewed each of the selected documents. A total of 18 policy documents (Table 1) that guide SWM at national level and in the two cities were specifically identified and reviewed. The documents included, eight national level frameworks (the Constitution of Kenya 2010, Kenya Vision 2030, and the National Solid Waste Management Strategy 2014; The Environmental Management And Coordination Act (EMCA), 1999; Waste Management Regulations (2006); Environmental Management and Coordination (Waste Management) Regulations of 2006; The Environmental Management and Co-ordination (Water Quality) Regulations, 2006; The Environmental (Impact Assessment and Audit) Regulations, 2003); five sectoral frameworks (The Physical Planning Act; The Public Health Act; The Local Government Act (Cap 265 of Laws of Kenya); The Occupational Safety and Health Act, 2007; The County Governments Act, 2012); and five local frameworks (the Integrated Solid Waste Management Plan for the City of Nairobi 2010-2020, the Nairobi City County Solid Waste Management Bill, 2014, the City Council of Nairobi (Solid Waste Management) By-Laws of 2007, the City of Nairobi Environment Outlook, 2007 and Mombasa Environmental Management Bye Laws, 2008).

Gender and life course in context

In this analytic review, gender refers to the extent to which men and/or women were considered in a policy framework. Similarly, life course in this paper meant the extent to which a policy document considered children, adolescents, adults and elderly without any discrimination. Where it is stated as “every person” or “all people,” it was assumed that both gender and life course are equally addressed at all levels. The reviewers noted that policy provisions generally lack details and specificity but information and policy texts are generally broader and generic, but interpretation of these provisions could vary at operational levels.

Extraction/abstraction of information

The review team extracted and/or abstracted gender and gender-related; and life-course information from the selected policy documents after thorough review of each of the selected relevant policy document. The extracted information include both ‘referred’ (addressing gender and life course explicitly) and ‘related’ (addressing gender and life course implicitly) contents. The extracted information along with key characteristics of the policy documents was collated into a matrix. This matrix was reviewed by all the co-authors for content validity and clarity and was revised based on the inputs and further review of the policy documents.

Analysis and synthesis

The extracted information has undergone a qualitative interpretive synthesis. There were three levels of progressive analysis and synthesis of information: 1) whether the policy addressed gender and/or life course in SWM? 2) How the policy documents addressed gender and/or life course in SWM? And 3) to what extent the policy frameworks have addressed gender and/life course in SWM? Relevant information was categorised and summarized under each level of analysis. Key texts from the policy documents were also quoted in the synthesis of the information to facilitate seamless description of the analysis outputs. Main findings were summarized in tables and narrative summaries.

4.2 Primary data collection and analysis

Qualitative data used in the present study were from a bigger project (solid waste management and health) being implemented by the African Population and Health Research Centre. The qualitative data were used in this paper to supplement the review of policy documents outlined above. The data collection was conducted both in Nairobi and Mombasa. A combination of in-depth interviews (IDIs), key informant interviews (KIIs) and focus group discussions (FGDs) were completed in both cities, with a total of 143 purposively sampled respondents. Gender and age were taken into consideration in the selection of study participants. The IDIs and FGDs were conducted with community members and scavengers, while the KIIs were conducted with policy makers, civil society organizations, international non-governmental organizations, community based organizations and national institutions responsible for environmental issues in Kenya. Informed consent was obtained from study participants before they were allowed to participate in the interviews. All interviews were audio-recorded and transcribed verbatim by professional transcribers, translated into English, in the case of interviews conducted in the local language, and validated by an independent transcriber. After the transcription, all KIIs, IDIs and FGDs transcripts were coded for emerging themes by a qualitative data analyst using Nvivo 10. Thematic analytical approach (Fereday, 2006) was employed in the analysis of the data.

4.3 The local settings of Nairobi and Mombasa

According to the 2009 Census, in the administrative area of Nairobi, 3.1 million inhabitants lived within 696 km² (269 sq. mi). The city is currently the 13th largest city in Africa, based on population and fourth largest in infrastructure development and its size. It has only one official dumpsite – the Dandora dumpsite, which is located north east of the city, about 7.5 kilometers from the central business district. However, there are many other unofficial dumpsites scattered across the city. The

current municipal solid waste generated daily in the city is estimated around 4,016 tons (Njoroge et al. 2014). The responsibility of waste collection lies with the Nairobi City County, however available estimates suggest that only 50% of waste generated in the city is collected and the total waste reuse and recycling is estimated at about 100-150 tons/day, amounting approximately to 5% of total waste generated (Kasozi and Blottnitz, 2010). The official designated dumpsite at Dandora has reached full capacity, and has been noted to be responsible for gross environmental and public health hazards (UNEP, 2006) and already causing significant environmental pollution and damages to human health, especially to more than 200,000 people living in the surrounding settlements of Korogocho, Babadogo, Lucky Summer, and Dandora. These poor communities, while contributing least to the problem, are bearing the burden of an environmental catastrophe. The most affected are between 6,000 and 10,000 persons who scavenge at the site. These men, women and children, commonly referred to as 'Chokora', brave the dangers of the dumpsite in search of escape from the ravages of extreme poverty (Odero, 2012).

Mombasa is the second largest city in Kenya with a population of about 720, 000. The city has the largest seaport in East Africa and is an important tourist destination. It has two official dumpsites, Mwakirunge and Kibarani. Kibarani is at the outskirts of the island and Mwakirunge is 15 kilometres from the town centre. The Mombasa Municipal council collects about 68 percent of the 650 metric tons of total waste collected daily. Community based organizations, including youth groups in different parts of the city are also involved in garbage collection as a way of generating income (Kithia & Dowling, 2010). Sakijege et al. (2012) identified blocking of the water stream by haphazard dumping of solid waste and construction among key determinants of flooding and associated risks of water and air pollution, diseases, waterlogging and blocked accessibility in Mombasa. Evidence from other case studies confirm the role of poor waste management in urban flooding through blocking drainage, increasing debris and harbouring disease vectors. Consequently, focus on adequate SWM have become an emerging issue in flood risk management practice (Lamond et al. 2012). At within 45 meters above sea level, Mombasa has a history of disasters related to flooding, with around 17 per cent of the city likely to be submerged by a sea-level rise of 0.3 metres. The situation is exacerbated by socioeconomic factors, particularly high population densities, together with the large number of unplanned settlements that have encroached into areas demarcated for infrastructure such as roads, drainage and sewerage lines (Awuor et al. 2008). Consequently, in the search for pathways to reduce risk accumulation and exposure of the most vulnerable in urban Africa, understanding SWM policies and practices in Nairobi and Mombasa, particularly how such are

related to gender and the life-course remain an important research agenda, which is the primary objective of this paper.

5.0 Results

5.1. Results: Review of policy documents and frameworks on SWM in Kenya

The results of this review showed that Kenya has many policies and regulations that guide environmental and SWM both at the national and county levels (Table 1). For example, Article 42 of the Kenyan Constitution states that every person has a right to a clean and healthy environment and article 69 encourages public participation in environmental management, protection and conservation (Republic of Kenya, 2010). Similarly, the social pillar of Kenya's long-term development plan - Kenya Vision 2030, indicated the need to have a just and cohesive society that enjoys equitable social development in a clean and secure environment (Republic of Kenya, 2007). This document also emphasizes gender equality in relation to environmental issues. SWM is one of the environment related flagship projects in Kenya's Vision 2030 (Republic of Kenya, 2007), with a proposal for the relocation of Dandora dumpsite (the only legal dumpsite in Nairobi) and development of SWM systems in 5 leading municipalities and in the economic zones planned under the Vision (Republic of Kenya, 2007). The National Solid Waste Management Strategy 2014 was formulated to guide sustainable SWM in Kenya, to ensure a healthy, safe and secure environment for all. The strategy is driven towards compliance with the existing legal frameworks such as the constitution of Kenya, Vision 2030, Environmental Management and Coordination Act (EMCA) 1999, and the Environmental Management and Coordination (Waste Management) Regulations of 2006. The strategy has outlined 13 minimum points that all the 47 counties in Kenya should pay attention to waste collection, transportation, disposal and licensing to help county governments embrace environmental friendly SWM practices (NEMA, 2014). It also listed several waste management objectives and strategies, which stipulated strategic alignment and recognition of partners through public private partnership. However, it is not clear who the anticipated partners are, and whether they include stakeholders in the informal sector, particularly women and other vulnerable groups, who are very critical in the SWM chain and generally bear the brunt of poor SWM related risks.

At the city levels, the National Solid Waste Management Strategy has analysed the current SWM practices in Mombasa and has identified the presence of scavengers in all waste disposal sites (NEMA, 2014). However, the strategy does not recognise scavengers as important stakeholders in SWM process. The analysis also revealed absence of basic sanitary facilities at the disposal sites but

failed to proffer any solution to the problem despite the obvious health risks the scavengers are exposed to. Similarly, there is no disaggregation of who these scavengers are, in order to know whether men, women, youth or old people are involved in the scavenging process.

The mission of the Integrated Solid Waste Management Plan for the City of Nairobi 2010-2020 is aimed to improve and protect the health of residents and visitors, ecological health, diversity and productivity, and to maximize resource recovery through a participatory approach. The delivery strategies are supposed to be all inclusive, financially sustainable and based on sound policies (Nairobi City Council, 2010). Specifically, one of the actions recognized as part of the centre-piece for reaching set objectives and targets in the plan is the recognition and strengthening of the multiple partners that already exist in the city. However, the recognition of partners is defined as “recognize, formalise and streamline the operation of CBO’s in waste collection so that they have the same legal and operational status as private collectors; formalise the operation and roles of actors involved in waste recovery and trading activities (i.e. waste pickers - operating at the neighbourhood, street and dump level, waste dealers and suppliers to large-scale recyclers); and formalise waste material supply chains to the recycling industry itself to minimise exploitation of informal recyclers and negotiate pricing”. While this approach termed Participatory Solid Waste Management, combines environmental and social issues such as employment generation, increased income generation, improved occupational health and the promotion of human development opportunities and environmental health in general (Jutta, 2010), it failed to isolate gender specific issues, as well as, place people at different stages of the life course in the plan.

Table 1: How SWM policy frameworks in Kenya addressed gender and life course

SN	Policy Framework	How gender is addressed	How life course is addressed
1	Constitution of Kenya 2010 (Article 42 and Article 69)	Addressed both genders together: “Every person has the right” “Every person has a duty” “... benefit of people of Kenya” “...Public Participation”	Addressed life course in generic terms: “Every person has the right...” “Every person has a duty...” “... benefit of people of Kenya” “...public Participation...”
2	Kenya Vision 2030	Gender equality considered as a guiding principle: “Gender, youth and Vulnerable groups” “Equity and Poverty Elimination”	Adequate emphasis on equity for youth and vulnerable groups: “Vision 2030 for youth and vulnerable groups is equity in power and resource allocation.”

3	National Solid Waste Management Strategy 2014	Has inclusive objective: “...ensure a healthy, safe and secure environment for all.”	Non-discriminatory recognition of challenges: “...ensure a healthy, safe and secure environment for all.”
4	The Environmental Management And Coordination Act (EMCA), 1999	Has all-inclusive objective...none gender specific: “Every person in Kenya is entitled to a clean and healthy environment”	Not life-course specific but emphasizes on the inclusion of all: “Every person in Kenya is entitled to a clean and healthy environment”
5	The Physical Planning Act, and	Emphasizes on physical development: “.. Land Development approvals” “...Siting waste disposal sites” “...Environmental Impact Assessment”	No mentioning of life-course: ..”appropriate physical development plans may have a bearing on life-course”
6	The Public Health Act	Protection of the health of the population: “...Emphasizes on environment, sanitation, health and hygiene for all”	Non-discriminate approach: “...ensures a healthy environment, sanitation, health and hygiene for all”
7	Integrated Solid Waste Management Plan for the City of Nairobi 2010-2020	Non-specific on gender: “...healthy, safe, secure and sustainable solid waste management system” “...Improve and protect the health of all” “ ... Maximize resource recovery through a participatory approach”	Protection of human health: “...Aims at improving and protecting the health of all residence and visitors to Nairobi “...participatory approach to SWM”.
8	Nairobi City County Solid Waste Management Act 2014 (14)	Promotes public participation: “...encourage public participation in SWM” “... SWM is a shared responsibility”	Non-specific objective: “...Every person ...entitled to a clean and healthy environment” “...has a duty to safeguard and enhance the quality of the environment”
9	City Council of Nairobi (Solid Waste Management) By-Laws of 2007	Responsibilities of property owners or occupiers: “....shall deal with the waste arising from the premise”	Non-specific objective: “Any person, who produces, carries, keeps, treat, disposes of waste etc. with an exception to domestic household waste is made to authorized persons”
10	City of Nairobi Environment Outlook, 2007	Gender roles identified as important: “....encouragement of public participation in waste recycling, especially the	Specific on life course:

		participation of women, young people, trade unions and other civil society organizations”	“... participation of women, young people, trade unions and other civil society organizations in SWM”
11	Mombasa Environmental Management Bye Laws, 2008	Non-gender specific: “...formulated in line with the EMCA of 1999” “...the only stand-alone policy framework that address solid waste management in Mombasa.”	Not specific on life-course: “...like the EMCA, emphasis on all-inclusiveness”
12	The Local Government Act (Cap 265 of Laws of Kenya)	Role of local government authorities: “... make decisions that guide among other things the development of a solid waste management system”	Lack of awareness about laws: “...most of the stakeholders in the solid waste management sector, especially the households are not aware of the existing laws governing the sector”
13	Waste Management Regulations (2006)	Non-specific on gender: “...Streamline the handling, transportation and disposal of various types of waste” “... waste minimization, cleaner production and segregation at source”	Non-specific objective: “... protect human health and the environment”
14	Environmental Management and Coordination (Waste Management) Regulations of 2006	Non-gender specific objective: “Any person whose activities generate waste shall collect, segregate and dispose or cause to be disposed off such waste in the manner provided for under these Regulations”	Non-specific on life-course: “...Any person whose activities generate waste...”
15	The Environmental Management and Co-ordination (Water Quality) Regulations, 2006.	Protection of aquatic environment: “...No person shall discharge or apply any poison, toxic, noxious or obstructing matter etc. into the aquatic environment...”	Not address life-course directly: “...No person should pollute the aquatic environment by discharging dangerous substance into without complying with the lay down standards”
16	The Environmental (Impact Assessment and Audit) Regulations, 2003	Emphasizes on what constitute a waste: “...liquid, solid, gaseous or radioactive...” “.. discharged, emitted or deposited in the environment in a manner likely to cause an alteration of the environment”	What is expected in audit report: “...indicate various materials, including non-manufactured materials, the final products, and by products, and waste generated”

17	The Occupational Safety and Health Act, 2007	Emphasizes on the safety of all workers: "...employers shall develop a suitable system for the safe collection, recycling and disposal of waste to avoid the risks to safety, health of employees and to the environment".	Safeguard the safety of all employees: "...Measures to be taken to protect the health of employees as well as the environment"
18	The County Governments Act, 2012	Non-gender specific objective on sustainable use of resources for the benefit of all: "Promotion of the economic, efficient, effective and sustainable use of resources, the recycling of waste, and other appropriate environmental objectives"	Emphasizes on the sustainable and prudent use of resources for the benefit of all: "...sustainable use of resources, the recycling of waste, and other appropriate environmental objectives"

Furthermore, most of the other city- focused SWM policy documents similarly failed to specifically incorporate gender and life course aspects in their provisions. For instance, The City Council Solid Waste Management By-Laws of 2007, generally state the various laws and obligations of various parties involved in SWM in the city, while the City Council Solid Waste Management Bill of 2014 re-emphasized the laws spelt out in the 2010 Constitution and the need to provide for and regulate participation of various actors in SWM in the county (Nairobi City County, 2014). An important exception is the City of Nairobi Environment Outlook, 2007, which specifically highlights the need to involve women and young people in SWM. It proposes the formulation and implementation of an integrated SWM strategy that provides measures for managing or controlling the generation, collection, minimization, transportation, recycling, treatment and final disposal of wastes. This integrated SWM strategy is supposed to ensure the creation of awareness about the harmful effects of solid wastes among city residents and promotion of public participation, especially women, young people, trade unions and other civil society organization in waste recycling (Nairobi City Council, 2007). Notwithstanding, the gender and life-course issues raised in the City of Nairobi Environment Outlook, 2007 were not carried forward in subsequent policy and program frameworks.

5.2 Results: analysis of primary qualitative data

The results of the qualitative data revealed that Kenya does not only lack specific SWM policies on gender and life-course as illustrated in the review above, but also lack effective implementation and enforcement culture. The existing policies suffer from implementation and enforcement challenges

as well as clarity. Community respondents described the current SWM policies and institutional frameworks as ambiguous and do not show clearly how SWM should be addressed in Kenya. They asserted that the Nairobi city authority for instance, lacks clear policy on how it wants to develop the future of SWM. However, respondents drawn from the county government and National Environmental Management Authority (NEMA) thought otherwise. To them, there are clear demarcation of policy and institutional mandates, what is however lacking is the implementation and enforcement of SWM laws and regulations. A case in point is the public health laws and regulations, which are not rigorously enforced. Respondents attributed the ineffective implementation and enforcement of policies and regulations, especially at the county level to a dysfunctional relationships between national and devolved level governments. Nonetheless, government representatives blamed the ineffectiveness of policy implementation on the citizenry. This is what one provincial administration Chief had to say about SWM problems confronting his area of jurisdiction and how this may not change.

“It will not change in the future if the common citizen will not be sensitive on waste disposal, because what we lack in Kenya is implementing legislative policies, so it’s not about the policies but it’s about the perception of we Kenyans to be able to follow the law just like our friends in Tanzania or even Rwanda. We should cease from being ignorant and change for the better; most people have to be forced in following the law” [sic] (KII, Provincial administration Chief).

“For sure I am determined to change, but the problem with Kenyans is the tendency to accept policies. Kenyans are good in accepting negative policies rather than positive ones so in fact I have served as a chief for seventeen years but I am facing major problems with my people” [sic] (KII, Provincial administration Chief).

However, community members and civil society groups are of the view that the lack of enforcement of SWM regulations should be blamed on corruption and lack of political will to enforce the regulations. They further identified political interference as a key factor that affect the effective implementation of SWM policies and frameworks in Kenya. This is what one of them had to say.

“..I also tend to think that some of these challenges are self-inflicted in the sense that we have people within the government sector who are not keen to see a sector that is orderly and a sector that is functioning properly and by that I mean the corruption that is within the county government. It is actually affecting their capacity to deliver because instead of people putting in place measures and mechanisms that can be able to ... can provide enabling environment for proper management, we

have people who are every day scheming on how they can make money even from the private sector..."[sic] (KII, CSO representative)

Another key finding from the qualitative data is that scavengers who are made up of men, women, adolescents and children are not recognized in the SWM paradigm in Kenya. This is consistent with the observations made in our review above. Despite the critical role this group play in SWM, government officials and community members do not consider them as important actors in SWM, but major contributors to the SWM problems. This is what one of the respondents had to say.

"Yes, Scavengers, is the biggest problem! Instead of now keeping the place to be clean, the scavengers even make it worse because they remove the stuff from there, they create another dumping site of their own, where they collect the scavenged where they sort out [sic]" (IDI, Community respondent)

The scavengers themselves acknowledged that government officials and community members do not appreciate their work and even look down on them.

"We are being looked down upon that we are scavengers and maybe we have lost our future life and therefore we are seen as useless. But it's not our wish, it's part of life and once we get some good job we will not stay here [sic]" (FGD, Scavengers).

The above notwithstanding, scavengers in both cities think their work has a great impact on SWM in the community. This is what one of them has to say;

"Yes it has a very big impact and by withdrawing our activities then the community will suffer a lot in terms of garbage accumulation. This will increase the chances of contracting diseases like cholera, stinking smell all over, mosquitoes and flies" [sic] (IDI, scavenger).

The analysis above did not disintegrate the views expressed by the respondents by sex and age, but considered the sentiments as collective views of males and females, and young and older adults.

6.0 Discussion

This study was set out to investigate the extent to which the existing SWM policies and practices in Kenya incorporated gender and life-course, the effective implementation and enforcement of policies and regulations and the differential challenges of exposure to solid waste for children, men

and women. The results of our review show that Kenya has many national and county level policies and regulations that guide environmental and SWM in the country. What is however generally lacking in these policies and regulations are provisions addressing gender and life-course specific challenges, which are critical for effective and sustainable SWM. This is particularly so because of the different roles men, women and children play in the SWM process. Our review of the available literature shows that only two policy documents out of 18 specifically address the issue of gender and life-course in relation to SWM. Nevertheless, the gender and life-course issues captured in these policy documents were not incorporated in the subsequent policies and frameworks. There is also no evidence that these aspects of the policy were implemented on the ground, probably due to poor policy implementation culture. For example, the analysis of the qualitative data reveals that the bane of the Kenyan waste management sector is the ineffective implementation and enforcement of SWM policies and regulations. In fact, community members are of the view that besides poor enforcement culture, the existing policies and frameworks are not clear enough to drive the future of SWM in the country.

Although, gender and life-course specific issues were not raised in the qualitative research, the general consensus of participants, both community and government is that Kenya has major challenges in implementing SWM policies. The key obstacles in policy implementation identified by the study participants included corruption, lack of political will, political interference and lack of cooperation from the citizenry. These obstacles affect SWM policy implementation at both national and city levels. This in effect means that even if gender and life-course were specifically outlined in SWM policies, the poor implementation culture may make it difficult for the citizenry to benefit from such policies. The forgoing discussion suggests that developing a policy or legislative framework is not enough, there must be the will, especially, the political will to operationalize such a policy. Suffice to say that the gaps between policy formulation and implementation are evidenced across many low and middle income countries (Okoroma 2006, Makinde 2005).

The lack of specificity in the policy provisions was observed across majority of the documents reviewed. Rather, broad and general information are generally provided in policy texts. Yet, many international organizations, protocols and conventions have emphasized the need for specific policies on gender and life-course to be incorporated in environmental management frameworks (UNDESA, 1992, UN, 1995, AU, 2003; Lawyers Circle and Oxfam, 2014), to promote sustainable SWM. For example, the UN Fourth World Conference on Women in Beijing did not only advocate for women participation in environmental issues at all levels, but the need to integrate gender concerns

and perspectives in policies and programmes for sustainable development (UN, 1995). The gender and life-course dimension was also captured in Agenda 21 of the United Nations Conference on Environment and Development (UNDESA, 1992), as well as in the Maputo protocol adopted by the African Union (AU, 2003; Lawyers Circle and Oxfam, 2014). Kenya being a signatory to most of these protocols, statutes and conventions, it was logical to expect that policy makers in Kenya will prioritise gender and life-course in all relevant policy guidelines that deal with environmental management, including SWM. The lack thereof may mean that assenting to an international convention or protocol does not necessary translate into domestication and implementation of the same at the country or sub-country levels.

The need for SWM policy specificity with regards to gender and life-course and the effective implementation of the same stems from the fact that waste handling disproportionately touches the lives of women and children, particularly in developing and transitioning countries (UNEP 2005; Fredericks, 2008; Gani et al., 2012). Women have the sole responsibility of managing the household waste with assistance of their children (both male and female) partly because they are the managers of the home, and perhaps because women tend to be among the most marginalised groups in some societies (Fredericks, 2008; Gani et al., 2012; Organization for Security and Co-operation in Europe, 2009; UNEP 2005; Water et al., 2000). The same can be said of risks associated with SWM outside the home. Children and women are more prone to poor SWM related risks than men for example (Cointreau, 2006; Longe et al., 2009; Gani et al., 2012; Kadfak, 2011; Jerie, 2011), with children disproportionately bearing the greatest risks (Cointreau, 2006; Longe et al., 2009). Therefore, it is critical that policy makers formulate policies and regulations that will take into account the differential challenges of exposure to solid waste for women, men and across the life-course. This effort will help protect the health and well-being of the vulnerable in society and at the same time create a more sustainable SWM system. The forgoing notwithstanding, the analysis of the qualitative data clearly show that scavengers, who include women and children and who are usually exposed to high risks as indicated above, are not recognised as important players in the SWM chain by Kenyan policy makers as well as community members. This might partly explain why not much attention is paid to specificity on gender and life-course in Kenyan SWM policies and frameworks. Indeed, by not recognising them (scavengers) as key actors in the SWM chain but rather a nuisance, no effort would be made to address their concerns, thus exposing this population to various types of risks as enumerated in the review above.

The lack of policy specificity highlighted in the present review is not only limited to Kenya. A review of policy documents from both high and middle income countries show a similar trend—gender and life-course are not specifically addressed. Evidence from Victoria, Australia, confirm that none of the policy documents reviewed specifically address the issue of gender and life-course (EPA Victoria 2009). Furthermore, the ISWM framework (Hoornweg & Bhada-Tata, 2012), which is widely recommended as the best approach to address solid waste issues, especially in low income countries, also failed to isolate gender specific issues as well as place people at different stages of the life-course in the framework. The same can be said of the Hong Kong’s policy framework (Environmental Protection Department, 2005), which aims at addressing urgently the growing municipal solid waste problems in the country. Nevertheless, there is evidence that lack of policy direction and specificity on gender and life-course can result in ineffective and inefficient SWM outcomes (Creighton et al. 2008; OECD, 1998; UNCHS, 2000). Thus, the effectiveness and sustainability of waste management initiatives can be achieved through the incorporation of gender and life-course perspectives in SWM policies and regulations and ensuring their implementation, not only in Kenya but also in other low and middle income countries.

7.0 Conclusions and recommendations

The policy documents reviewed show that the provisions of SWM policies and legislations in Kenya are largely generic with only two of 18 policy documents incorporating some specific focus on gender and life-course issues. Although, we acknowledge the tendency to less details and specifics at policy levels, it is supremely important to note that generic policy statements may hinder policy implementation and policy impact. The significance of policy specificity hinges on the fact that women, men and children participate in and are affected by SWM differently in Kenya and across low and middle income countries. It is therefore important to develop and implement SWM policies that disaggregate SWM issues on the basis of gender and life-course challenges. This will help understand the issues that are peculiar to these subgroups and develop strategies to address them. The analysis of the qualitative data show that Kenya has an ineffective policy implementation and enforcement culture due to a variety of reasons. Efforts to remove all the possible barriers to effective implementation and enforcement of SWM policies and regulations is called for. Scavengers who are made up of men, women, adolescents and children are not recognised in the SWM paradigm in Kenya, despite the fact that this population is considered a key player in the SWM chain in the literature. Scavengers may need to be integrated into the SWM policies and practices for sustainable SWM. To this end, comprehensive strategic policy revision across all sectors to mainstream gender and life-course challenges in relation to SWM will need to be initiated in the

country and within specific cities and ensuring that the policies so formulated are implemented and enforced.

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Conflict of interest

None declared

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