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Stakeholder's Involvement in Human Waste Management in the Informal Settlements in Sub-Saharan Africa: Case of Eldoret Municipality

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Abstract: ***Urban centres have been evolving for many centuries across the world. Human waste is currently an emerging problem in urban areas in the developing countries mostly in the informal settlements. The unsustainable handling of human wastes has led to the problem of land, air and water pollution, which is potential risk to humans and the environment. Taking cognizance of the problem, many cities are now investing in human waste management programmes involving an integrated approach that involves majority of the stakeholders. This study examined the stakeholders' involvement in human waste management in the informal settlements in Sub-Saharan Africa (SSA). Data were collected using both primary and secondary methods. Primary data were collected from a sample size was 125 public, 12 members of the EMC, 15 members from the MoE, 11 from MoH and from 12 key informants while secondary data were collected from document previously published on human was management in Eldoret and other urban areas in SSA. Stakeholders such as public, environmentalist, planning agencies, government, NGOs, media and financial sector existed in the management of human wastes but did not work in harmony against the problem leading to proliferation of the problem. There is a need to give priority to environmental protection, educate and empower all stakeholders to monitor and manage human wastes in their environment. Also the main actors involved in human waste management in SSA should ensure that there are sufficient, appropriate and secure human waste management facilities in informal residences.***

1. Introduction

In most developing countries, there has been a propensity towards the concentration of growing populations in urban areas and cities. Within the developing world, urban centres and cities are the centres of growth and governance, as well as home to an increasing proportion of the population. Many countries in Sub-Saharan Africa (SSA) have recently experienced accelerated urban expansion [1, 2]. According to a 2004 UN report on World Urbanisation Prospects, in 1950 there were only 20 million people, or 10 to 15 per cent of the total population, living in urban areas in SSA. Since the early 1970s, Sub-Saharan Africa had the highest urban growth rate in the world, averaging 5% per annum [3]. The rapid population growth and uncontrolled urban expansion is creating problem of informal settlements in the urban environment in many countries in the SSA [4].

In the informal settlements of the SSA, a discrepancy exists between the growing population and the increasing demand for sanitation and human waste collection services on one hand and the capacity of the national and local government to provide these services on the other hand leading to proliferation of human wastes [5]. Areas that require urgent action with respect to waste management include: prevention of human wastes being a menace, conducting house-to-house awareness of human wastes, promote public participation, providing adequate community facilities to prevent occurrence of human wastes among other. Achieving sustainability in human waste management requires an integrated approach [6]. Integrated approach to waste management may include the use of different collection and treatment options, prevention, recycling, energy recovery and environmentally sound disposal methods as well involvement and participation of all the stakeholders. The integrated approach to human waste management may therefore require consideration of the technical, environmental, managerial, legal, economic and financial aspects.

Technologies/tools are available to tackle most of the environmental issues of cities, but what is often lacking is the inability or even unwillingness to clearly define the priorities and play respective roles. On account of low priority, these services in developing countries have continued to remain inefficient and outdated [7]. However, it has not been easy task to plan and implement an action plan to achieve these objectives without active participation of various stakeholders [8]. Yet information on stakeholder involvement in human waste management in SSA is rare or lacking. The aim of the current study was to determine the stakeholders' involvement in human waste management in the informal settlements in Sub-Saharan Africa, using Eldoret Municipality as a case in point.

2. Research Design and Methodology

The study was undertaken from April to November 2013 in Eldoret Town described in [5]. The study design was a case study, which involved studying one of the urban centers in SSA and extrapolating the results elsewhere. The objectives of this paper were met through the use of a qualitative research method which relies on the individual experiences and usually associated with the social constructivist paradigm or interpretive paradigm which emphasises the socially constructed nature of reality. The research involved why and how questions and the researcher had no control or manipulation over the behavioural events.

The study used both primary and secondary data during this study. Primary data were collected from a sample size was 125 public, 12 members of the Eldoret Municipal Council (EMC), 15 members from Ministry of Environment (MoE), 11 from Ministry of Health (MoH) and from a total of 12 key informants from sectors that directly deal with human waste management. Others were: honey sucker operators, government officials, and physical planning departments. A sampling frame was obtained from the Kenya Demographic and Health Survey (2010) (http://www.nacc.or.ke/index.php?option=com_booklibrary &task=view&id=6&catid=124&Itemid=122). This information was provided by the District Statistics Office in the then Uasin Gishu District. Participants were sampled through multistage sampling system. Data were collected through 142 semi structured questionnaires and interviews through face to face and telephone interviews. A total of 49 interviews were conducted among them 3 focus group discussions from the selected sampling locations. Observation augmented the other data collection methods. Therefore, direct observation on their action with regard to their responses was done to verify the accuracy of their responses and therefore used as a method of data collection [9]. Document from earlier reports conducted for and on behalf of Eldoret Town information were also reviewed. These literatures reviewed guided the selection and formulation of questions and the questionnaire design. At the end of data collection, all completed questionnaires were thoroughly examined by the researcher, coded and organized for computer analysis.

3. Findings and Discussion

The key actors and their roles for environmental protection are shown in Table 1. Householders were the main generators of human wastes but other stakeholders such as environmentalists, planning agencies, government, NGOs, general public, financial institutions were responsible for providing the legislation, enforcement and finances to manage human wastes. From the information gathered from the respondents, it was clear that, in these informal settlements, the most commonly used facility for HW disposal is the pit latrine. This facility, for it to be effective and environmental friendly, must be well designed and constructed in accordance to health and environmental requirements. It has also to be routinely emptied. All these activities have to be accomplished by the owners of the houses that have been rented. It is worth noting that some of the prices for emptying was considered very high by most households and even their landlords/ladies. These points to the fact that that could be the reason why they were not emptied regularly or not emptied at all. This poses a challenge to the overall exercise of HWM in informal settlements. The local authorities (LA) is aware of the health risks and environmental problems caused by inadequate human waste management. At the same time they also look for new ways to share their traditional responsibilities in these areas with neighborhood communities, micro- and small enterprises (MSEs) and large private entrepreneurs and industries and other stakeholders. Increasingly, the local authority may seek to mobilize the human and financial resources of these actors in order to develop an adequate system of managing human wastes. Most of the residents in the informal settlements are tenants (about 80%). They are therefore the primary users, yet they are not responsible for the construction and routine maintenance of the facilities for HWM but such tasks were apportioned to the landlords who were responsible for providing the facilities and maintaining them.

Table 1: Key actors and their roles for environmental protection

Actor	*Role/concern(s)*
Environmental regulators	Setting environmental regulations and standards
Planning agencies	Integration of environment and development planning
Government (National and County	Policy guidelines with resource allocation and policy enforcements
Sectorial agencies	Cross-sectoral coordination and incorporating environmental considerations
NGOs	Community mobilization and support framework
Public	Participation in decision making, implementation and monitoring
Private sector	Implementation appropriate action plans
Media	Awareness of the environmental problems and public sensitization
Academic institutions	Focus research on vulnerable population and dissemination of the findings to larger audience including policy makers, government, planners and managers
Financial sectors/institutions	Supporting environmentally sound projects

The Stakeholders and what they actually do in enhancing human waste management is shown in Table 2. The public plays an important role in sustainable HWM for which awareness on waste reduction, segregation and recycling needs to be enhanced. Collection of human wastes is a labor intensive and consumes large portions of the budgets of the Municipal Councils in the developing countries. As human waste through open defecation, overflow of the sewers, poor toilet design, most of the informal settlements in the urban areas ignorance of the problem is always the most preferred method of management [5]. This can be substantially reduced by public participation in source segregation and door to-door campaigns which rarely happens. In some cases, communities themselves are willing and able to take on some of the investment in the management of the human wastes (Personal Observation). In rural areas, community participation and NGOs active engagements is increasingly common but in urban settings formal relationships with communities are rare and such initiatives are lacking. Effective social intermediation, including awareness raising, user group and NGO formation, micro-financial services, health education, hygiene promotion and consumer education is required for an effective service delivery and is essential for community management [10]. Social intermediation can be provided by community-based organization (CBOs), NGOs, small-scale private providers or by local government. A CBO can be a critical partner in local waste management when its activities deal with subjects concerning the environment, health, education or community service. It was, however, discovered from observation by the researcher and responses from the households that the facilities for human wastes management

in the informal settlements have been poorly constructed and hardly maintained. The participants from health sector (Public health officials and the in-charge of health centres in these settlements) described the sanitation of the settlements as being poor, deplorable and risky to the people's health and environment and indicated that there is no proper involvement of stakeholders. EMC plays its role in HWM via three of its departments: the departments of planning, health and environment. The study noted that the council through its departments had various roles and functions which promoted good health and environment. It is has the authority and mandate to plan thorough its planning department in liaison with the District Planning office, provision of health services through health department and manage the environment. Eldoret Water and Sewerage Company (ELDOWAS) provided services related to water and sewerage as well as supply water, construct and maintain sewer lines. We also determined that National Environmental Management Authority (NEMA) was also involved in management of matters pertaining to the environment through legislation. NEMA works in conjunction with other stakeholders in the environment sector to ensure that the environment is safe and that all environmental threats are addressed. However, enforcements of the legislations were not easy because they relied on government security forces for the enforcement. In all, it was discovered that the main stakeholders did not play a fundamental role in HWM, especially in the informal sector.

Table 2: Stakeholders and what they actually do in enhancing human waste management

Stakeholders	Role
Public	Practice reduction and source segregation. Cooperate with other stakeholders to reduce human wastes
Municipal Council	Keep human waste management a priority. Provide infrastructure inputs and services. Have defined organizational setup of staff. Implement public/private participation. Maintain database
Urban planners	Demarcate space for human waste management facilities.
NGOs	Encourage community participation in human waste management. Network with other stakeholders to enhance human waste management. Engage unemployed youth in human waste management. Organize clean ups of the human wastes.
Academia	Influence the mind and culture of human waste management. Inculcate discipline in student minds with regard to human waste management. Conduct research on best aspects of human waste management
Business owners	Ensure they cooperate with local authority to manage human wastes. Build suitable toilets and other facilities for any customer to reduce human wastes proliferation
Government agencies	Provide policy framework and enforcements for human wastes Lead a clean city campaign and work in unison towards human waste free urban areas.
Cooperations	Ensure all employees are aware of the problem of human wastes and ways of preventing proliferation of the human wastes. Sponsor clean up programmes in areas of intense human wastes Built facilities for human waste management

Using multivariate approach (PCA) the association between the various stakeholders in management of human wastes (Fig. 1). There is a large degree of overlap in the management of human wastes in Eldoret Municipality. In one cluster, planners, NGOs, Local authorities and CBOs were the main actors and differed in management approach practiced by EMC, ELDOWAS and exhaust services; these bodies worked closely. Large conglomerations of the stakeholders was observed for MoE, MoWI, WSP, households and MoH who were established to work much closer but still very different from the universities and environmentalists. The media was found to operate in different levels from all the other stakeholders.

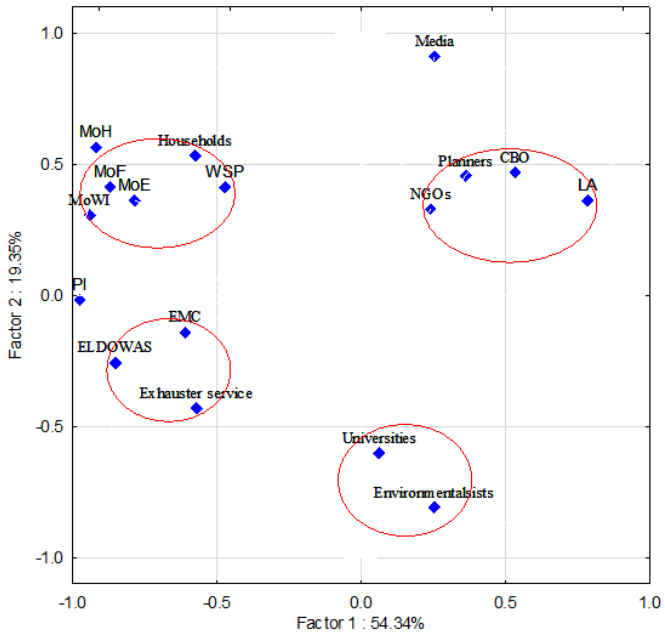

Figure 1: Principal component analysis vector diagram showing the degree of association in involvement of various stakeholders in human waste management

4. Conclusions

An unambiguous clarity about the objective(s) of an effort and participation of all key stakeholders are absolutely essential towards sustainable solutions to human wastes. Mere availability of technology/tools is no guarantee that human waste management would be undertaken in a proper manner. The roles of all householders in minimizing human waste and proper disposal are critical, both as an expression of individual responsibility and as a form of concerted efforts. It belongs to the roles of CBOs to mobilize these households, to supervise performance by service providers, and to coordinate human waste management activities with other stakeholders including the local authority. The stakeholders have a range of roles in this respect, including policy-making to legitimize and support the roles of communities and MSEs; support for and participation in information and awareness raising campaigns; and providing reliable secondary collection and management facilities.

5. Future Prospect

Proper human waste management is a matter of importance for protection of public health. There is an urgent need to give priority to environmental protection, to educate and empower all stakeholders to monitor and manage human wastes in their environment. The major actors involved in human waste management in SSA should ensure that there are sufficient, appropriate and secure human waste management facilities in informal residences. This will cause the residents to see their worth and strive to use the appropriate facilities for their needs. The challenge that now faces local authorities is to create sustainable models of sector in the informal urban areas of human waste management.

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Dr. George Kwedho an Engineer with over 30 years experience in water and sanitation sectors in Kenya, United Kingdom and Japan. He is an expertise in designing, construction operation and maintenance of Water/Sewerage systems. He has held senior management positions at Eldoret Water and sanitation Company, Western Water Services Company and Lake Victoria North Water Services Board. Additionally, he has PhD in Environmental Planning and Management from Moi University.

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