



The Role of Local Authorities in Solid Waste Management (A Case of Murewa Growth Point, Zimbabwe)

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Abstract: Solid waste management is a burning issue in rapidly urbanizing countries. This study sought to explore the solid waste management practices employed by vendors and shop operators and establish the role of the local authority in solid waste management at Murewa Growth Point, Zimbabwe. A total of 83 respondents were interviewed, representing 10% of each target group. Thirty six residents, twenty three vendors, seventeen shop operators and seven officials from both Environmental Management Agency and Murewa Rural District Council were interviewed. Data generated in the study were analyzed using the Statistical Package for Social Sciences (SPSS). The research showed that despite the efforts by the local authority to construct refuse collection points and placing bins in front of shops residents continue illegal dumping and littering the growth point. Women (56.6%) were more active in solid waste management than men (43.4%). Awareness on solid waste management legislation and waste disposal practices were mainly through clean-up campaigns (31%), composting (14%), recycling (25%) and awareness campaigns (15%). The research revealed that illegal solid waste management practices impacted negatively on public health and the environment as the dumpsites became the breeding sites for vectors such as mosquitoes and flies. It is recommended that there is need for more environmental education and awareness campaigns, enforcement of solid waste legislation by the responsible authorities. Murewa rural district council should protect refuse collection points from stray animals and improve waste collection services in the growth point.

Keywords: Solid waste, legislation, illegal dumping, Environmental management agency, local authority.

1. Introduction

Solid waste management (SWM) is becoming an issue all over the world. Zimbabwe produces an average 2.5 million tonnes of solid waste (household and industrial combined) per annum (Practical Action, 2007). In Zimbabwe the formal sector is not doing well and therefore the informal sector

activities are mushrooming everywhere in the country including Murewa Growth Point (MGP). In Botswana only 38% of the 250 000 tonnes of household waste produced is delivered to disposal sites. In the larger towns, 40% of residents have their refuse uncollected by the local authority (Maburutse, 2009). Lack of preventative measures and tight controls have resulted in high risks of water pollution for both surface and ground water, posing severe threats to public health in Botswana (Urrio and Brent, 2006).

Murewa growth point is endowed with vast human activities including car repairing, shoe making/mending, vending, clothing manufacturing, hair dressing, shop operators among others (Mapira et al. 2018). All these sectors generate solid waste which poses a threat to public health and the environment. Chanza et al. (2017) pointed out that improper solid waste management has characterized the country's cities, towns and growth points and in some cases the problem is extending to highways. The issue of illegal open dumping is one aspect that has proved to be detrimental to the residents and environment of MGP. Rapid movement of people from rural areas to urban areas in search of greener pastures, hyperinflation and lack of financial capital by the municipalities has resulted in the failure of providing adequate services by the councils (Masocha, 2006).

The composition of solid waste includes food and organic waste, paper and cardboard, glass, metal, plastics and textiles, although certain wastes may be hazardous due to inherent toxic or explosive characteristics (Rushton, 2003). Developing nations are particularly vulnerable to increasing pressures of urbanization given limited capacities for managing a financially and technologically complex system (World Bank, 2012). The major problems which local authorities face in collecting and transporting waste are caused by improper planning of bin collection, the lack of a suitable timetable to collect waste, poor road networks and the lack of vehicles and suitable infrastructure (Moghadam et al. 2009). As of 2015, two to three billion people (often in least developed countries) lack access to proper SWM services. A study by Schlueter (2017) in Kisumu, Kenya, showed that if the municipality is reliant on tax revenue for service provisions, low cash in-flows with the concurrent increasing in service needs may contribute to the collapse of SWM systems. The role of the local authorities/municipalities around the world is to provide efficient and effective services to the residents, and solid waste management is among it. Despite the challenges faced in solid waste management, the local authority has by-laws, which solicits the Environmental Management Agency (EMA) to conduct workshops and awareness campaigns so as to minimize illegal dumping of solid waste.

With the increasing trend of solid waste in urban locations, local authorities are faced with economic constraints and the public health risks from uncontrolled wastes (Practical Action, 2007). It is clearly time to revisit the issue of managing solid waste in a more cost effective and sustainable way. Building and setting incentives for public cooperation and participation, and identifying opportunities to improve solid waste management calls for more information on current household perceptions, knowledge and practices relating to solid waste management, and on the current level of interactions between local authorities and communities.

2. MATERIALS AND METHODS

2.1 Study Area

The study was carried out at Murewa Growth Point which is in Mashonaland East province, Zimbabwe. It is located 86 km north-east of Harare along the Harare-Nyamapanda highway. It is situated 1400m above sea level and is surrounded by 15 villages. It is a vibrant growth point with various industrial and human activities (Mapira et al. 2018).

2.2 Research Design

The study triangulated both quantitative and qualitative research techniques. The triangulation strategy utilized both the subjective and quantitative methodologies which allowed the interviewer to use interviews, questionnaires, field observations and photographs.

2.3 Sampling and sample size

A purposive sampling was used to select officials from Murewa Rural district council (MRDC) and Environmental Management Agency. A 10% sampling size was taken from population study.

2.4 Methods of Data Collection

2.4.1 Questionnaires and interviews

Semi-structured questionnaires were administered to attain adequate information from residents on solid waste management activities undertaken by the Murewa business community, residents staying close to refuse collection points, MRDC staff and EMA personnel. Seventy six questionnaires were administered and seven open ended nature of interviews were conducted in this study. The respondents were allowed to make their considerations without interference from the researcher. The interviewer had the freedom to probe and request for more details from the participants on solid waste management in MGP.

2.4.2 Observations

Participatory and non participatory observations were used in this study. Observations assisted the researcher to view day to day activities that were undertaken by the residents in relation to solid waste management. Observations were also made at refuse collection points and solid waste bins.

2.4.3 Photographs

Photographs were also used to obtain data on the solid waste produced and the activities done by residents of MGP. They were used because they capture the activities and depict pictures about the phenomenon being investigated.

3. Results and Discussion

3.1 Demographic Profile of the Respondents

About 28.9% of the respondents were aged between 18 to 30 years, whilst 45.8% were between 31 to 45 years and 25.3% were 46 years and above (Table 1). The sample included only respondents who were 18 years and above. The age profile of the respondents were regarded as acceptable for this research as they were expected to be aware of the forms of legislation on solid waste management and can be prosecuted if they break the law.

Table 1: Age distribution of respondents in Murewa Growth Point (n= 83)

Variable		Age Category	Percentage (%)
Male	Female		
9	15	18 – 30	28.9
17	21	31 – 45	45.8
10	11	46 and above	25.3
36	47		100

3.2 Educational Level of the Respondents

Regarding the educational background of the respondents, 24% had completed grade seven whilst 46% had attained secondary education, 29% had tertiary education and 1% had not attended to any formal education (Figure 1).

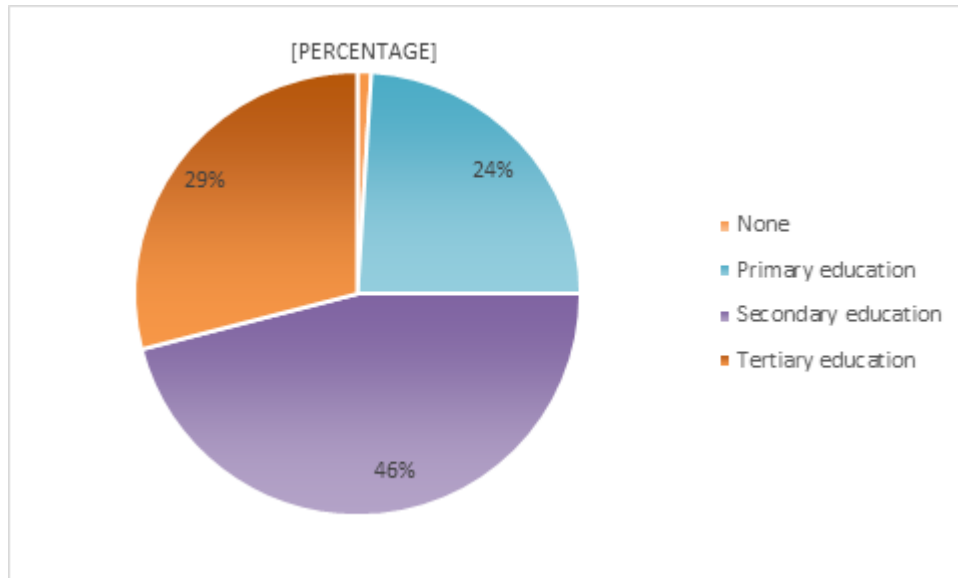


Figure 1: Educational levels of the respondents in Murewa Growth Point

3.3 Solid waste management practices at Murewa Growth Point

Research findings show that 31% of the respondents reflected clean-up campaigns as their SWM practice, 14% cited composting from bedding in poultry and timber production, 25% from recycling and 15% indicated education awareness campaigns. Twelve percent of the residents were engaged in re-using solid waste as a resource. Damaged tyers were used for making flower pots and empty plastic containers for re-filling paraffin and motor oil which was traded outside the shops. Three percent of the respondents indicated that they use other practices such as burying and burning waste in open spaces and at the backyards of their houses. Ogwueleka (2009) indicated that throughout Sub-Saharan Africa solid waste production surpasses its collection. The amount of waste produced has outstripped the rate at which the environment can decay it. This is tied together by poor waste collection in high density areas across the African continent.

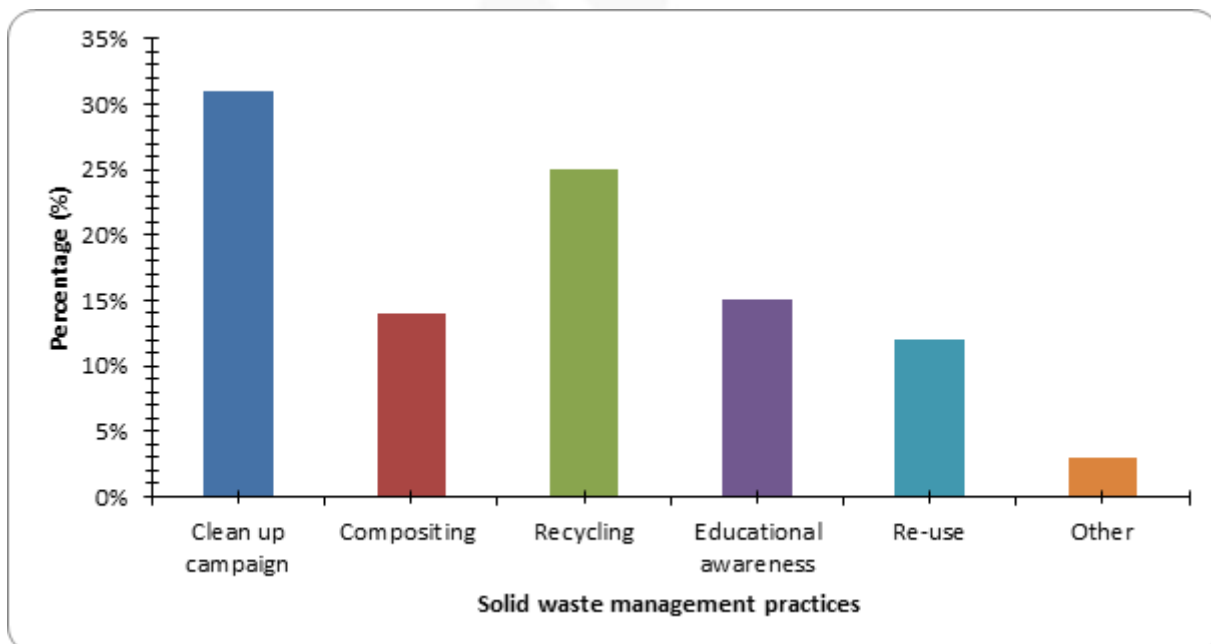


Figure 2: Solid waste management practices at Murewa Growth Point

Solid waste ranging from plastic bags, polythene bottles and bottles caps, empty bottles of beer were collected by a Community Based Organisation (CBO) known as Poly-Wax (Figure 3). They make floor polish, cobra, wax and shoe polish from empty plastic bags, plastic containers

and doormats using plastic bottle caps. Plastics, cans, scrap metals and plastic bottles are the main solid waste materials which can be recycled easily.



Figure 3: Waste assortment by a Community Based Organization in MGP

However, despite the concerted effort by the local authority and the CBO, some residents continued illegal dumping of waste by the road-side and in open spaces. For instance the local authority has constructed the refuse collection sites for disposing waste and residents still dump waste outside the refuse collection point or at in unoccupied stands (Figure 4). Places targeted mostly by illegal dumpers include vacant land, open spaces and unfenced housing stands awaiting development. Gukurume (2011) stated that in most urban areas waste can go for weeks and months uncollected resulting in residents' illegally dumping rubbish in open spaces.

The study observed that refuse collection points were not protected from stray animals and rain (Figure 4). Through field observations some dogs carrying away diapers from the refuse collection points were observed. This is in line with the findings of Chimhowu (1998) who posits that dumping sites are also exposed to animals like dogs, cats, and others which during scavenging scatter the waste in the surrounding areas.



Figure 4: Illegal dumping of waste by the roadside and outside the refuse collection site in Murewa Growth Point

3.4 The role of the Local Authority in Solid Waste Management at MGP

Clean-up campaigns were undertaken by the MRDC and EMA. MRDC was responsible for providing refuse removal trucks during the clean-up campaigns, brooms and gloves. Training of people

on proper solid waste management principles such as pre-sorting, disposable methods, education awareness exercises during the clean-up campaigns were done by EMA. MRDC played a pivotal role in placing solid waste bins in front of shops and designated areas to avoid illegal dumping (Figure 5). However, responses from the interview indicated that the local authority is encountering a lot of challenges in the management of waste as some refuse bins are stolen. This concurs with the findings of Chimhowu (1998) who indicated that litter bins which are provided for use are either stolen or vandalized. The researchers noted that when members of the public failed to adopt a culture of cleanliness they litter around the growth point. A study by Masundire and Saunyanga (1999) revealed that in areas, such as Kasane (Botswana), Livingstone (Zimbabwe) and Chirundu (Zambia) there were few storage containers such as litter bins thus people ended up sharing bins resulting in over spilling of the bins.



Figure 5: Solid waste bins placed in front of shops at Murewa Growth Point

Responses from EMA officials highlighted that the main drive on solid waste management is anchored on multi-sectoral system where private sectors, government institutions such as schools, prison services and hospitals have a collaborative effort. Murewa rural district council established a waste management task force to deal with solid waste. The task force is chaired by DELTA, the main producer of solid waste and has proven to be functional in terms of management initiatives. Section 69 of the Environmental Management Act (2002), states that no person or group of individual is allowed to dispose waste that will pollute the environment or affect the health of people. Section 36 also states that every user should take necessary measures to reduce waste through waste minimization. The Environmental Management Agency assists local authorities and participates in any matters pertaining to the management of the environment and in particular to regulate and monitor the collection, disposal, treatment and recycling of waste.

On paper the refuse collection schedule for Murewa Rural District Council is once per week. However, the senior hygiene officer reported that some of the schedules are not being met as the council is suffering from a lot of challenges. This is supported by Gukurume (2011), that waste collection is challenging and costly for most local authorities. The timetable for waste collection in most cities is usually once or twice in seven days. The findings from the interviews indicated that the local authority is facing a number of challenges including shortage of fuel, equipment, inadequate funds and insufficient labour force, which hampers efficient delivery of solid waste management services.

The prevailing unstable macro-economic environment characterized by critical shortages of fuel and foreign currency has resulted in poor performance of the local authority in solid waste management in the growth point. A study by Chanza et al. (2017) in Beitbridge Town Council revealed that poor solid waste management has been attributed to the lack of functional by-laws, unregulated business enterprise, occupancy of unserviced stands, insufficient handling facilities and demographic challenges. Masocha (2004) posits that residents resort to illegal dumping and burning of refuse when the council

failed to collect refuse. The report by the senior environmental officer is in agreement with Boadi and Kuitunen (2002) who argued that to improve solid waste management, there is need to enforce laws against illegal dumping and use the crude dumping system to dispose solid waste.

Musademba et al. (2011) indicated that open waste dumps are prime breeding sites for houseflies, rodents, mosquitoes, and other vectors of communicable diseases, such as fever, dysentery, diarrhoea, cholera and malaria. Prikford (1983) propounds that mosquitoes and houseflies fly a distance of 5 kilometers from the dump site to the houses. This can result in diseases like cholera and malaria affecting those who stay close to the waste dumps whilst air pollution may cause lung diseases like tuberculosis. Boadi and Kuitunen (2002) stated that in developing countries flies and mosquitoes reproduce fast because of the warm weather conditions which are conducive to breeding leading to a negative health consequence from improperly managed waste. Waste also diminishes the value and beauty of a place, thereby reducing its attractiveness to residents and tourists.

3.5 Challenges in Solid Waste Management in Zimbabwe

Poor solid waste management in urban areas pose threats to water quality, causing the spread of water borne diseases such as cholera. Although the Zimbabwean legislation now requires local authorities to construct sanitary landfills for solid waste management, various capacity gaps remain a challenge. According to Chanza et al. (2017), most established cities and towns such as Harare, Bulawayo, Gweru, Mutare, Chinhoyi, Beitbridge and Bindura are still involved in crude dumping on unsanitary dumpsites. Similarly, Siamachira, (2003) revealed that about 60% of solid waste from residential and commercial areas remain uncollected in Zimbabwe. The cholera outbreak in Zimbabwe during 2008/09 season is believed to be as a result of improper solid waste management (Manzungu and Van der Zaag, 2010).

Under conditions of urbanisation, environmental challenges have intensified as urban centres struggle to cope with the enormous demands placed upon them by explosive population growth and most urban areas suffer from bad smell (Jerie, 2014; Kawaware et al. 2019). According to Makwara and Magudu (2013), local authorities have experienced serious technical and financial resource inadequacies to meet their refuse collection and disposal obligation, a traditionally critical component of local authorities' mandate. The volatile economic conditions induced difficulties in budgeting and planning processes of local authorities resulting in insufficient funds being devoted towards refuse removal, disposal and management.

In contrast, Kativhu (2006) posits that putting the blame on the economic situation is an easy scapegoat as it implies that the situation cannot be improved until economic recovery takes foothold. However, the researchers noted lack of financial resources and equipment by the local authority as the main contributing factor to poor service delivery at Murewa Growth Point. Furthermore, this has been worsened by the business community which is docile in terms of solid waste management.

3.6 Effective Solid Waste Management Practices

Forty three percent (43%) of the respondents highlighted that community participation is a pragmatic tool in alleviating solid waste challenges affecting the growth point. The respondents suggested that collaboration of the community with the various stakeholders is one of the best option in tackling solid waste management issues. Community participation and the concept of 3Rs, that is reduce, recycle and re-use of solid waste should be widely adopted at household, community and national level. Jerie and Bgwoni (2015) indicated that these strategies (reduce, recycle and re-use) reduce waste on landfill sites in most developing and developed countries, hence this has called for re-thinking.

Local authorities are given powers to control their areas of jurisdiction under the Urban Act chapter (CAP 29:15) or Rural district Councils Act (CAP 29:13). In terms of section 90 each local authority is required to have by laws guiding the manner in which certain activities are performed towards the management of waste. Statutory instrument (SI) 6 of 2007 also provides for the best management principles on solid waste. Under Environmental Management Act (20:27) local authorities are mandated to come up with waste management plans and have environmental committees and sub-committees for the management of the environment including solid wastes.

However, Jerie (2014) posits that City Councils are experiencing immense challenges in paying monthly wages to its workforce due to limited income from the ratepayers. The private sector plays a pivotal role in solid waste management through assisting the financially crippled local authorities in the provision of loans to purchase refuse vehicles, fuel and supporting community projects and activities linked to solid waste management. Mudzengerere and Chigwenya (2012) indicated that developing countries face shortage of tools and unsuitable machinery which is unproductive in waste management. As such local authorities have failed to manage solid waste due to financial issues as there is huge expenditure needed to provide for the service. At times the challenge is further compounded by the absence of financial support, limited resources and the unwillingness of the users to pay for the service.

4. Conclusion

This study revealed that solid waste quantities were ever increasing, but the problem faced by MRDC to render effective and consistent solid waste collection and disposal services remains unabated. This impacted negatively on public health and the environment as the dumpsites became the breeding sites for vectors and some diseases such as cholera and typhoid. The solid waste management practices by the local community included the clean-up campaigns, education awareness, recycling, re-use and composting. The results of this study revealed inadequate human resources, lack of co-operation and awareness by residents and financial constraints as the major challenges in solid waste management at Murewa Growth Point. This study therefore concludes that refuse collection points should be protected from stray animals to prevent littering of solid waste and be collected regularly.

5. Recommendations

The study recommends that non-governmental organizations should promote sustainable solid waste management practices at in their areas of operation. MRDC and EMA should intensify education awareness, support the Community Based Organizations in waste management projects as well as intensify law enforcement to curb illegal dumping of waste and burning. MRDC should increase equipment including waste collection vehicles and litter bins so as to meet the capacity of its residents.

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