

INTEGRATED STUDY OF SOLID WASTE MANAGEMENT SYSTEM IN THE KANIFING MUNICIPAL COUNCIL (KMC) – THE GAMBIA

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M.Sc (GS 22815)
3rd Semester

1.0 Introduction

The quality of the environment in many developing countries particularly in urban areas is rapidly deteriorating. Inadequate municipal solid waste management is certainly one of the major contributing factors to the degrading of environment quality (UN-PDDESA, 2005).

The improvement of solid waste collection and disposal services alone can no longer solve the problem. A holistic and integrated effort must be made to minimize the quantity of solid waste generated. This requires the cooperation of and fully participation of those who generate the waste, which include the general public. Recycling and resource recovery can considerably reduce the amount of work necessary for the collection and disposal. Hence they can play an important role in coping with the ever-increasing problems of solid waste in the urban settlement (PEPAS, 1991).

Solid waste comprise all the wastes arising from human and animal activities that are normally solid and that are discarded as useless or unwanted. It is all-inclusive, encompassing the heterogeneous mass of throwaways from urban community as well as the more homogeneous accumulation from of agricultural, industrial, and mineral wastes (Tchobanoglous etal., 1993)

Agamuthu (2001), define solid waste as waste arising from human and animal activities that are normally solid and unwanted. The classification of solid waste uses variety of schemes i.e. physical (solid, liquid, gaseous), original use (packaging waste), material (glass, paper, plastics), physical properties (combustible, compostable), origin (domestic, commercial, industrial, agricultural) and safety parameters (hazardous, radioactive).

Solid waste has become a problem throughout the world. Lack of space for dumping solid waste has become a problem for many large metropolitan heterogeneous areas. Communities are concerned about the increasing costs of waste disposal, possible hazards to groundwater, and maintaining air quality.

Problems with solid waste have increased dramatically over the past several decades because of population increases and the attitude that convenience is a very important part of the life-style especially in developing countries.

1.1 Solid Waste Management in KMC – The Gambia

Urbanization is a dynamic process, which involves a variety of changes in all aspects of the society and its environment. Although both developed and developing countries have experienced urbanization, the phenomenon is newer and it is occurring at faster rates in developing countries including The Gambia (DOSLGL, 2001).

Kanifing Municipal Council – KMC, is one of the densely populated and rapidly growing urban settlements in The Gambia. This could be attributed to the fact that it is the nerve

center for commercials, industrial, social amenities and other business activities in the country all of which serve as embodiment for waste generation.

Solid waste is collected from residential, commercial, markets and recreational areas, offices and institution such as schools, hospitals, fish processing industries and hotels constitutes the following: sand, organics, paper/carton, glass, wood, metals, textiles, rubber, and other cuttings. According the GBA and Brikama Waste survey report (2002), the waste from GBA constitutes the following percent composition by weight: Sand 44.18%, organics 35.05, paper/carton 11.42%, glass 2.22 %, wood 0.18%, metals 3.110%, textiles 2.44%, rubber 1.40%, and other cuttings 0%.The report indicated that the per pita waste generation for GBA and Brikama is 0.54 kg.

According to the Bakoteh Dumpsite Solid waste Management Study (GAP, 2002) report the average amount of solid waste carried by collection vehicles to the Bakoteh Dump Site were 143 tons per day. The report showed that 92 tons were carried daily by KMC while the remaining 51 tons were collected by other collectors or own means of the residents. Out of the 167.69 tons/day of solid waste generated in 2002 at KMC, The 143 tons/day to the Bakoteh dump site represented 85% collection ratio. However based on the 92 tons per day by KMC, the collection by KMC was only 55%.

2. Objective of the study.

The general objective is to study solid waste in Kanifing Municipal Council (KMC), the Gambia.

The specific objective of the research includes the following;

1. To determine the ramifications of poor solid waste management and the impact of this solid waste on the communities in the study area.
2. To find out problems associated with the management of solid wastes at Municipal Authority level
3. To determine the applicability of integrated Solid Waste Management System (ISWM) in the KMC in addressing solid waste problems.

3 Research Methodology

This study was carried out in the Kanifing Municipal Council – KMC, one of the densely populated and rapidly growing urban settlements in The Gambia. The KMC has an area of 80km² and is the centre for major business activities in the country with a population of 322,735 (GBoS 2003). The KMC is divided into five Constituencies represented by national assembly members at national level and seventeen Wards represented by Counselors at Municipal Council level.

The survey population constituted all the residence households of the Kanifing Municipality. However, to determine the sample size of the population within the Municipality, this formula has been used to derive an appropriate size for the study area. At 95% confidence level or P = .05 is assumed for Equation:

$$n = \frac{N+1}{1+N(e)^2}$$

Where:

n = is the sample size,

N = is the population size,

e = is the level of precision.

From that households were sampled using systematic random sampling method and an individual of each household interviewed in different wards of the municipality.

The data were collected by developed questionnaires, where a total number of 410 questionnaires were prepared. These were administered in 10 wards of the 17 wards of the Kanifing Municipality. From the selected wards, a number of households were sampled using systematic random sampling method and an individual of each sampled household was interviewed. However, this was supplemented by personal interviews with the municipal council authorities, urban planners and administrators, and environmentalists, and other key stakeholders in the sector. Additional field work was done to ascertain the amount of waste generated in a day in the sample region.

The information obtained from the questionnaires were reduced into tables, bar and pie charts, graphs and other analysis using correlation and or regression using appropriate statistical methods.

Results and Discussion

Preliminary results from the study indicated that solid waste management within KMC still posed a big challenge for the municipality. These challenges could be possibly attributed to certain factors which include inter alia; high population pressure, inadequate public awareness on solid waste management issues, insufficient funding to deal with ever increasing burden of solid waste management, inadequate equipment for collection and disposal, lack of appropriate waste disposal facilities and ineffectiveness of the waste related laws and regulations.

Some of the initial results from the study were presented into figures as indicated below:

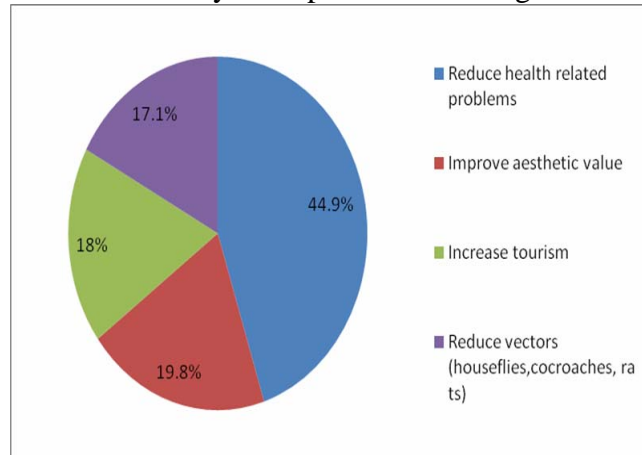


Figure 1. Benefit of a proper waste management system on the environment and public in KMC

In Figure 1, above, 44.9% of the respondents indicated that proper solid waste management will reduce the health related problems such as malaria and other dirt borne illnesses. While 19.8%, 18% and 17.1% respectively of the total respondents cited that solid waste free environment will lead to improve aesthetic value, improve tourism and reduce vector prevalence in the municipality.

As highlighted from the figure above, most of the household interviewed believed that when the area is clean, there is a great impact on the health of the people, meaning, cleanliness prevent people from being infected and therefore knew the benefits of a clean area and the absence of which will lead to a reverse situation on the public. Moreover, another sizeable number of the respondents viewed a waste free municipality will lead to

increase tourism as well as the aesthetic value in the municipality among others. Hence, most of the major hotels are located in the KMC and tourists would like to stay and move around in a clean and healthy environment.

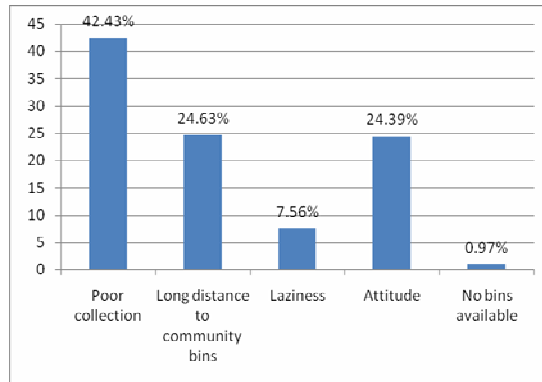


Figure 2 what leads to indiscriminate dumping

In Figure 2, above, 42.4% of the respondents indicated that indiscriminate dumping of solid waste in the municipality of KMC is due poor collection while 24.6% and 24.4% of the total respondents attributed the indiscriminate dumping to be caused by long distances to community bins and attitude of the people respectively. Furthermore, another 7.6% and 1% of the respondents considers indiscriminate dumping to be due laziness of the residents and unavailability of bins in their locality.

As shown from the information above, most of the household interviewed associate the problem of indiscriminate dumping of waste to be caused by poor collection from the municipality. This could be possibly attributed to inadequate infrastructure and capacity of the municipality to deal with the magnitude of waste generated. However, another sizeable number of the respondents viewed the indiscriminate dumping to be caused by long distances to community bins placed by the Municipality and people attitude towards waste they generate. Long distance to community bins could be another important factor as household found difficult to carry waste for a long to dispose it and this leads to the attitude of placing wherever possible thus magnifying solid waste management problems within the municipality.

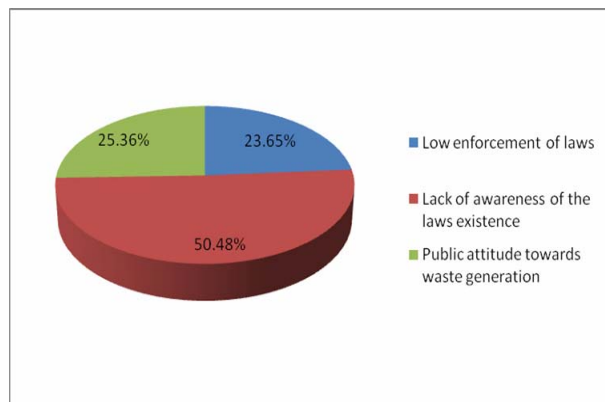


Figure3. Reasons for ineffectiveness of solid waste related laws

In Figure 3, above, 50.5% of the total respondents associate the ineffectiveness of solid waste related laws and regulations as lack of awareness of the existing laws in the Municipality while 25.4% respondents attributed the ineffectiveness of the waste related laws to public attitude towards waste generation. Another 23.7% of the respondents think the inadequate enforcement of existing waste related laws.

As indicated in figure 3, a little over half of the total respondent within the municipality in KMC, considers the ineffectiveness of the solid waste related laws and regulation to be possibly lack of proper awareness of the laws thus making them virtually non-existence. In addition, another greater number of the respondents viewed the ineffectiveness of the laws due to public attitude waste generation and the unwillingness to adopt change. However, another sizeable number from the respondents possibly attribute the ineffectiveness of the laws to be inadequate enforcement by law enforcement agencies. A law becomes respected by the society when enforced; otherwise it becomes a piece legislature written and kept to be implemented.

Significance of study:

In general, preliminary results from the research found that the residents of KMC were reasonably aware of the importance of proper solid waste management in relation to health and aesthetic value of a clean environment and are prepared to participate in its management.

However, root causes identified for solid waste management problems in KMC were un control solid dumping, high population pressure, inadequate public awareness on solid waste management issues, insufficient funding to deal with ever increasing burden of solid waste management, inadequate equipment for collection and disposal, lack of appropriate waste disposal facilities, ill-adequate technical capacity, low public participation and poor coordination among stakeholders imports of low quality goods among others.

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