

Research Article

Households' Awareness and Perception of Sanitation Bye-Laws in Ghana: Evidence from Kumasi Metropolis

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Abstract: The study seeks to assess households' perception and satisfaction for the current waste management system and to evaluate the level of awareness and attitude of households towards sanitation bye-laws within the Kumasi Metropolis. Data for the study was collected from secondary and primary sources. Questionnaire was employed in gathering the primary data. Statistical Package for Social Sciences (SPSS) was used to analyze it. The study revealed that the residents are not happy with the current sanitation situation within the metropolis. A large proportion of the respondents are not aware of the sanitation bye-laws of the Assembly. Furthermore, the study revealed that the frequency of waste collection is very low resulting in piles of waste in secondary receptacles which can lead to health hazards. The study recommended the need for the assembly to step up her efforts to educate residents within the metropolis on the sanitation bye-laws. Abridged versions of the bye-laws could be printed in both English and Twi languages and distributed to residents, as well as being published on the Assembly's website for easy access by internet users. It is also important that the KMA empower and motivate waste collection companies to improve their efficiency, expand their coverage to reach out to the entire city and get larger proportion of residents to subscribe to the private waste collection system.

Keywords: Ghana, Kumasi metropolitan assembly, sanitation bye-laws, waste management

INTRODUCTION

Humans generate a great deal of waste as a byproduct of their existence; dumping pits located in or around archaeological sites can attest to this. Every task, from preparing a meal to manufacturing of goods etc, is accompanied with production of waste material, which cannot be used for other things and needs to be disposed of effectively. If waste is not contained and handled appropriately, it can balloon into a huge problem (Wilson *et al.*, 2006).

In the management of waste, a major issue has to do with identification and transportation to appropriate disposal sites. Frequently, subscription pickup services are available, with people paying a flat fee for this service and people can also subscribe to specialty services for example, medical waste pickup services, or confidential paper shredding and disposal services.

Waste management practices differ for developed and developing nations, for urban and rural areas and for residential and industrial areas. For instance, in some cases management for non-hazardous residential and institutional waste in metropolitan areas is usually the responsibility of local government authorities, while management for hazardous commercial and industrial

waste is usually the responsibility of the generator. Developing effective waste management strategies is critical for nations all over the world, as many forms of waste can develop into a major problem when they are not handled properly.

According to the United States Environmental Protection Agency (USEPA, 2009), historically the amount of waste generated by the human population in the early ages was insignificant mainly due to the low population densities, coupled with the fact that there was very little exploitation of natural resources. Common wastes produced during the early ages were mainly ashes and human and biodegradable wastes and these were released back into the ground locally, with minimal environmental impact. Addition of plastics and non-biodegradable wastes has worsened the situation.

Municipal solid waste management constitutes one of the most crucial health and environmental problems facing governments/authorities of African cities. This is because even though these cities are using 20-50% of their budget in solid waste management, only 20-80% of the waste is collected. The uncollected or illegally dumped waste constitutes a disaster for human health and serious environmental degradation. Not only is their quantities increasing but also the variety; both as

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consequence of increasing urbanization, incomes and changing consumption habits fuelled by globalization. This scenario places the already-desperate urban councils in a difficult situation especially as they have to develop new strategies to deal with increasing volumes as well as strange varieties of wastes. Poor waste management practices, in particular, widespread dumping of waste in water bodies and uncontrolled dump sites, aggravates the problems of generally low sanitation levels within cities across the African continent.

Urbanization is on the rise in Africa and this trend is expected to continue in the future. Of concern is the inability of infrastructure and land use planning methods (including for waste management) to cope with urban growth, (the highest in the world) at 3.5% annually (UNEP, 2005). This is particularly urgent in slum areas, which constitute a big part of many of the cities and towns in Africa. Waste management infrastructure is largely non-existent in rural areas of Africa.

The gap between waste management policy and legislation and actual waste management practices is widening due to perennial capacity constraints and lack of waste management facilities for various waste streams. Access to major investments and acquiring the technical know-how needed to resolve the capacity constraints remain a tall order.

Waste generation is expected to increase significantly as a result of industrialization, urbanization and modernization of agriculture in Ghana and for that matter Kumasi. This will further aggravate current capacity constraints in waste management. Progress has been made in waste management policies and strategies. Biogas and compost production from organic waste fractionation has been widely accepted in Africa as a best practice and progress is being made in developing and implementing specific projects in various countries. However, the use of economic instruments and implementation of polluter-pays principles in waste management have yet to mature in most African countries (Carlson, 2005).

The single largest implementation challenge for managing waste policies remains creating sufficient capacity for environmentally sound management, including, where appropriate, recovery and recycling of various waste streams in most cities in Ghana particularly Kumasi Metropolis. The effort to do this is constrained by access to finance and technical know-how and appropriate policies. Kumasi Metropolitan Assembly (KMA) has made several attempts aimed at addressing the waste menace which is on the rise as a result of population hikes, growth in industrialization and consumer attitudes. The KMA has enacted several bye-laws to ensure that the city is clean. Despite these bye-laws the level of achievement of improved waste and sanitation in the Metropolis still leaves much to be desired as is evident on piles of wastes on the streets, city centers and homes. The question then is are households satisfied with the current waste

management situation within the metropolis and are they aware of sanitation bye-laws?

The main objective of the study is to assess households' perception and satisfaction of the current waste management system and to evaluate their level of awareness and attitude towards sanitation bye-laws.

MATERIALS AND METHODS

Study area: The study area is the Kumasi Metropolis. According to KMA (2006), Kumasi is the capital city in southern central Ghana's Ashanti Region. Its unique central position makes it accessible from all corners of the country. It is the second largest metropolitan area in the country and the administrative capital of the Ashanti Region. It is a fast growing Metropolis with an estimated population of more than two million people and an annual growth rate of about 5.4%. The Metropolis is about 254 km diameter; its physical structure is basically circular with a central located commercial area.

There are concentrations of economic activities in the Metropolis. The first and most important location is the Central Business District (CBD), which embraces the Kejetia Lorry Park, the Central Market and the Adum Shopping Centre. The other economic nodes include the Suame Magazine (vehicle repair centre), the Kaase/Asokwa Industrial Area and the Anloga Wood Market. It is estimated that 48, 46 and 60% of the Metropolis are urban, peri-urban and rural, respectively, confirming the fast rate of urbanization (KMA, 2006).

The Kumasi Metropolitan Assembly is divided into (10) Administrative Sub-Metro Council Areas.

Sampling and data collection: Sampling was undertaken in three stages. First the KMA was categorized into high, medium and low income classes. This was followed by a random selection of one suburb from each of the income classes. At the third stage 70 households were selected randomly from each of the selected suburbs. Data collection was undertaken with the use of structured questionnaire. Data was analyzed using mainly the Statistical Package for the Social Sciences (SPSS) software.

RESULTS AND DISCUSSION

Respondents' perception on waste management within the metropolis: Respondents were asked how many times waste collectors come to collect their waste from their households per week and whether or not they are satisfied with that. This is necessary because according to Navez-Bouchaire (1993), the management of household refuse is tied to perceptions and socio-cultural practices which result in modes of appropriation of space which are greatly differenced according to whether the space is private or public.

Table 1: Frequency of waste collection per week

Number of collection	Frequency	Percentage
1	72	76.6
2	18	19.1
3	2	2.1
4	2	2.1
Total	94	100

Field data, 2011

Table 2: Satisfaction with waste services provided

Satisfied	Frequency	Percentage
Yes	24	20.94
No	65	73.03
Total	89	100.00

Table 3: Methods of waste disposal

Methods	Frequency	Percentage
Secondary storage bins	84	40.7
Refuse dumps	56	27.2
Burning/dug holes	42	20.4
Private collectors/house-house collection	17	8.3
Others	7	3.4
Total	206	100.00

Field data, 2011

Table 1 presents the results on number of times waste is collected per week by the city authorized bodies:

The majority of the respondents (over 50%) did not have the privilege of getting a waste collection company coming to their homes to collect their waste.. For those who had the opportunity, 76.6% indicated that the collection companies only come once a week to collect the waste. Less than 3% of the respondents said their waste is collected more than thrice per week (four times per week).

Despite the importance of adequate solid waste management to the urban environment, the performance of many city authorities in this respect leaves much to be desired. According to Malombe (1993), irregular services rendered to producers of refuse by municipal councils compel them to find ways of disposing of refuse. It is observed that the main methods adopted by the producers are burning, composting, or indiscriminate dumping.

This is very common in Ghana where waste management services are largely inefficient and ineffective. It is estimated that about 83% of the population dump their refuse in either authorized or unauthorized sites in their neighborhood and due to weak capacity to handle solid waste, unsanitary conditions are created (Benneh *et al.*, 1993).

With regards to satisfaction, most of the respondents (73%) indicated not satisfied with the services provided by the waste collection companies (as presented in Table 2). Issues including the following were raised as reasons and frustrations accounting for this:

- The waste collection companies do not come for the collection on time
- They sometimes do not come at all within the whole week without any explanation to the households

- Dogs and livestock scatter the litter around
- The waste piles up and breeds mosquitoes
- The waste releases unpleasant smell
- It is non-appealing to the eyes when seen etc

These are some of the frustrations raised by the respondents and these indicate how dissatisfied they are with the current waste management service within the Metropolis.

Methods used by the households to dispose off waste: According to Stirrup (1965), the method of refuse disposal must be related to the nature of the community served, its financial capacity and the type of materials arising, climatic conditions, the desirability of utilizing materials in certain instances compared with the imperative need to utilize them in order to assist in the provision of vital raw materials. The effectiveness of the selected system will be determined in relation to the immediate disposal requirements and the need to cater for the conditions likely to arise from planned future developments in the area.

In trying to ascertain how households dispose off their solid waste, the respondents were asked to indicate the methods of solid waste disposal. It was realized that over 40% of the respondents take it to the nearest storage receptacle as presented in Table 3.

A relatively small proportion of the respondents constituting 8.3% enjoy the services of private waste collectors. These private/house to house collectors include waste companies and individuals who go to homes of their clients and collect their solid waste for a fee which varies from client to client depending on the locality. The final points of disposal for these private collectors also vary ranging from use of the refuse dumps to secondary storage bins and dump sites.

Over 20% indicated that the only option they had was to dig a hole and bury the solid waste around their homes whereas about 27.2% carry their solid wastes to rubbish dumping sites normally created by the residents of the communities. In fact only few (3.4%) stated other reasons which include dumping it on the street or the backyard.

A significant proportion of the respondents do use secondary storage bins or receptacles. The city authority (KMA) and sometimes in collaboration with other waste companies provide solid waste storage bins for households to keep in front of their homes. In other instances, the storage bins come in a form relatively large enough to be hooked to the rear of the waste transportation vehicles and are kept at vantage points in the communities for communal collections. People are expected to keep and store their solid wastes in such bins which are later picked up by the KMA or the designated company for final disposal at appropriate dumping sites.

It was noted from the study that, because most of the households depend on secondary storage receptacles provided by the KMA or waste companies, it puts so much pressure/demand on such receptacles. In fact, the

Table 4: Level of awareness of the bye-laws

Sequence of bye-laws	Description of the bye-laws	Aware (%)	Not aware (%)
1st bye-law	(1) Where the KMA has set aside a place for the disposal of refuse no person shall place, cause or permit to be placed any carrion, filth, refuse or rubbish or any offensive or unwholesome matter on any street, yard, premises, enclosure or open space within the Metropolis.(2) if any offender under sub-paragraph (1) of this paragraph has not been identified or discovered the existence of any carrion or other substance mentioned in the said section found close to any building shall be presumed to have been placed the owner or occupier thereof.	55.2	44.8
2nd bye-law	That occupier of any premises shall clear and keep free from all dirt, underbrush, under-wood, weeds, high grass, rubbish, rags, broken bottles and all offensive matter (filling up holes with stones, gravels or other like materials) the streets or roads at the front, back sides, thereof, with the drains, gutters and channels thereon. Provided that where two or more houses abound on the streets or roads, the occupier or each shall be responsible for keeping clean only that half of the street or road nearest to his premises	42.9	57.1
3rd bye-law	(1) No person shall cause a nuisance in any public or open space.(2) No occupier of any premises shall by any act, allow the existence of nuisance in his house	48.3	51.7
4th bye-law	(1) The removal of night soil from all premises in which private bucket latrines are kept shall be the responsibility of the house owner or occupier.(2) Any occupier who fails to remove a bucket of night soil when it is full commits an offence	58.6	41.4
5th bye-law	No food seller shall serve food in anything unless due care has been taken to make sure the food wrappers are hygienic	51.7	48.3
6th bye-law	No person shall deposit litter, refuse or other matter which may cause nuisance or block the passage provided for a gutter or drains	51.7	48.3
7th bye-law	Any person who contravenes any of these bye-laws commits an offence and shall be liable on conviction by a court or Community tribunal to a fine not exceeding c50, 000 or to a term of imprisonment not exceeding three months	51.7	48.3
Total		360.1	339.9
Percentage (%)		51.4	48.6

Field data, 2011

quantity available is not adequate and placement does not follow any regular pattern in terms of accessibility and convenience for all the households. This has a connection to assertion by Abrokwah (1998), in his study on refuse management in Kumasi. He pointed out that most sites used for refuse dump are chosen without taking into consideration the distance to be covered by residents. As a result, some are found quite far (sometimes between 200 m-1000 m) away from residents of a particular household. Due to the amount of usage of such storage facilities, they easily and quickly get full and the demand for regular emptying at right times is quite high.

This notwithstanding, respondents complained and explained that in most cases the receptacles could get full and be left unattended to for days. Even though they may not be emptied, people will keep dumping creating solid waste piles. This poses a great danger to residents as:

- Collection usually delays and dogs, livestock and pests/rodents scatter them around
- Piles of waste in and around the receptacles get rotten and usually give off unpleasant smell, breed mosquitoes and pose many health hazards
- It does not appeal to the eyes when seen giving the entire city an obscene vie
- It leads to pollution of the environment

The study revealed that, the service provided by KMA and waste companies appeared to be a tailor made and should have been the best and most convenient option for residents. However, its execution leaves so much to be desired. Residents explained that

they were made to understand that the solid waste would be collected once every week but this has consistently failed. They are therefore not pleased with the kind of services provided. In some cases, the collection company may fail to turn up for more than a month. When this happens, residents are left with no option than to resort to other unorthodox means of emptying waste including dumping in gutters and streets.

They further explained that the piles of waste in and around the receptacles get rotten and usually give off unpleasant smell, breed mosquitoes and pose many health hazards.

Level of awareness of the KMA bye-laws by respondents: Abrokwah (1998) observed that ignorance, negligence, lack of law to punish sanitary offenders and low level of technology in waste management are the major causes of waste management problems in Kumasi. He suggested that awareness should be created among residents to manage household refuse and educate them on the hazards that ill-disposed waste could poses problems to the environment and to them. Table 4 presents the respondents level of awareness of the KMA sanitation bye-laws.

It could be noted from Table 4 that up to 48.6% of the respondents do not know of the existence of the very bye-laws that govern their sanitation situation in the Metropolis. The number is significantly huge and threatening because even with those who seem to be aware, there is a challenge in understanding and abiding by it fully. A huge gap is therefore created when close to half of the respondents claim not to be aware of their

Table 5: Comprehensiveness of the KMA sanitation bye-laws

Response	Frequency	Percentage
Yes	62	39.74
No	22	14.10
I don't know	72	46.15
Total	156	100

Field data, 2011

sanitation bye-laws. This implies that, the educational programmes instituted by the Assembly to educate the public on its bye-laws are either very weak or not functioning well.

According to Agbola (1991), cultural derivatives, beliefs, perceptions and attitudes are learned response sets. They can therefore be modified or changed through education. This point to the fact that people's unconcerned attitudes towards solid waste can be changed for the better through education. According to Pacey (1990), formal education for women is a pre-requisite for change in sanitation behaviour.

With regards to those who are aware of the bye-laws, some indicated that they had the information from radio, TV, friends and family members. In fact, about 30% of the respondents interestingly could not tell where they got to know of the laws. Further enquiries at the KMA indicated that they have limited funding for educating the public; but could not explain why the bye-law which is supposed to be a document for public consumption is not published on the Assembly's website for easy access.

Perception of respondents on the bye-laws: The study again sort to find the public's perception of the comprehensiveness of the bye-laws with regards to its rewards, incentives and punitive measures to ensure its adherence and Table 5 presents the outcome.

A large number of the respondents (46%) are unaware of the comprehensiveness of the bye-laws and those who are aware have very little knowledge regarding the content. This is not surprising given that the level of public education pertaining to the bye-laws is not adequate and moreover, access to the bye-laws as hard copy document is difficult and it does not appear electronically on the official website of the KMA.

However, for those who may be familiar with the bye-laws (39.74%) indicate that it is comprehensive and contained the needed rewards and punishment to ensure adherence. However, they were quick to add that even though the bye-law contains a fine for law breaches to serve as deterrent to others, the fine of GHc 5.00 (\$ 2.50) as at January, 2012 does not make any significant contribution in punishing offenders of the law. About 13% think that, the bye-laws are not comprehensive enough and therefore suggest that they should be revised.

CONCLUSION

City authorities have not been able to do much in terms of solid waste management to win the trust and confidence of the respondents. The residents are hence

not happy with the current sanitation situation and perceive that waste problem within the city is not improving and this may cause diseases and destroy the environment with time.

The methods adopted by residents of the Metropolis to dispose off solid waste are not appropriate as they are not very environmentally friendly. For example burning gives off harmful fumes and smoke that pollutes the environment and dumping in backyards allows mosquitoes to breed and destroys the society's scenic views.

The objective and rationale behind the enactment of the city's sanitation bye-laws are not fully achieved as most respondents are not aware of its existence and contents. Much still needs to be done to educate the residents of the city on waste and sanitation.

The residents of the city perceive the sanitation bye-laws to be outdated, ineffective and unable to achieve the purpose for which it was established for.

RECOMMENDATIONS

The KMA should empower and motivate waste collection companies to improve their efficiency and expand their coverage of service to all residents of the Metropolis. They should also establish means by which a larger proportion of residents are encouraged to subscribe to private waste collection system.

Solid waste disposal bins should be brought closer to household to reduce distance from dumping sites in order to reduce the tendency of waste burning and backyard dumping. This must go hand in hand with enforcement of collection in order not to expose resident to any health hazards.

The sanitation bye-laws of the KMA should be made readily available to the residents. Abridged versions could be printed and distributed to residents of the Metropolis. It could also be published on the Assembly's website for easy access by internet users.

The Assembly should invest in educating the residents of the Metropolis to understand the impact of waste on the socio-economic development of a nation and the roles of the individuals. They should also be made to well understand the contents of the bye-laws and their implications.

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