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Residents' perceptions and attitudes towards urban solid waste management in the Berekum Municipality, Ghana



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Abstract

Solid waste management has become a daunting task for municipal and district authorities who seem to lack the capability and logistics to deal with the escalating waste situation. This paper examined residents' perceptions and attitudes towards urban solid waste management in the Berekum Municipality in the Brong Ahafo Region of Ghana. Using a survey questionnaire and in-depth interview guide, data was gathered from 150 randomly selected household respondents and three purposively selected key institutions. The Theory of Planned Behaviour which provides a framework for studying human behaviour guided the study. The study found that residents recognised solid waste management as a major problem. It was also revealed that residents do not currently pay for waste management services rendered to them. Strategies to address solid waste problem will need to consider adequate supply of containers, intensive public education and introduction of user fees for waste management services.

Keywords: Attitudes, Perceptions, Urban Solid Waste, Willingness-To-Pay.

Introduction

Waste generation and disposal have been part of human life since time immemorial but they have over the past decades become problematic throughout the world. As a result, most city governments are confronted with mounting problems regarding the collection and disposal of solid waste. For example, in March 1987, a barge laden with 3,200 tonnes of garbage set out from Islip in search of a dumpsite. The refuse had been turned away from a landfill in Islip, New York. The barge travelled 10,000 kilometres and stopped at several foreign ports, but found none of them willing to accept its noxious load. The three-month odyssey took the barge to Mexico, Belize, the Bahamas before it returned, still fully loaded to New York. The content of the barge was eventually disposed of in high seas. The futile voyage made headlines, giving many North Americans their first inkling of an impending crisis (Weisberg, 1993).

Mexico City, one of the largest cities in the world generates some 10,000 tonnes of trash each day (Sivakumar, 2010). Until recently, most of these torrents of waste were left in giant piles exposed to the wind, rodents, flies and other vermin. Manila in the Philippines has at least ten huge open dumps; the most notorious is called "Smokey Mountain" because of the constant smouldering fires. In the United Kingdom, municipal waste services were poor as rivers like the Thames were heavily polluted with waste and became nothing more than open sewers and also major sources of infectious diseases (Girling, 2005). In the same way, in the United States of America, particularly in California, many local government units and private vendors do not currently have a safe location for the disposal of street waste. Moreover in many parts of the world, there is no suitable land available for new landfills for the disposal of municipal solid waste. The problems with solid waste disposal have therefore, increased dramatically over the past several decades largely because of population increase.

In Africa, the situation is not different, recent studies have shown that the problem of waste management has become intractable and threatens to undermine the efforts of most city authorities. The city environment of most African countries is characterised by heaps of garbage, overflowing waste containers, choked drains, clogged streams and stinking gutters. For example, research conducted by Mwanthi, Nyabola and Tenambergen (1997) seems to suggest that the majority of inhabitants of Nairobi, Kenya had no regard for its beauty and appear to be able to live helplessly amidst a growing mountain of urban waste. As a result, sanitary and environmental conditions in Nairobi were in a deplorable state.

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Further, a study by Eaton and Hilhorst (2003) on solid waste in Bamako (Mali) and Ouagadougou (Burkina Faso) have shown that approximately 0.6 to 0.7 kilograms of waste are generated per person per day in these cities. This amount represents an estimated 600 and 700 tonnes per day for a city population of about one million. Today, municipal solid waste collection and disposal are particularly problematic in cities in the developing countries.

The urban solid waste management problem has been linked to rapid urbanization in Africa. With increasing industrialisation and urbanisation, generation of waste now outstrips safe disposal rate, especially in most cities in Africa (Hofny-Collins, 2006). It is believed that the greater the society's population and material wealth, the greater the amount and variety of waste generated (Scharfe, 2010). Thus, as population grows, income rises, and consumption patterns change, the volume of disposable materials continues to rise. In high-income countries, the problems usually centre on the difficulties and high cost of disposing the large volume of waste generated by households and businesses. On the other hand, in low-income countries, the main problems are related to collection, with between one-third and one-half of all solid waste generated in third world cities remaining uncollected (Raj, 2010).

Solid waste can take a variety of forms and is generated from a wide range of sources during diverse social, economic and industrial activities. In Ghana, cities and towns are experiencing worsening solid waste situation, in that human activities produce large volumes of solid waste and waste disposal constitutes a serious problem, in such places today. For example, cities like Accra, Kumasi, Takoradi and Tema have grappled with solid waste problems over the years. It is estimated that Accra, the capital city, and Kumasi the second largest city, generate over 3,000 tonnes of solid waste daily, yet, only about 10 percent of the solid waste generated is collected (Mensah & Larbi, 2005; Accra Metropolitan Assembly, 2009). In the same way, attitudes and perceptions of people within a geographical area towards waste management can also compound the waste management problem in that particular area. A casual observation of many Ghanaian cities tends to show how pedestrians, motorists, traders and passengers litter the streets and other public spaces. This, together with other waste disposal practices such as crude dumping, translates into the production of very large amounts of solid waste within a concentrated area; hence many urban residents live in unhealthy and life-threatening conditions.

Against the background of mounting waste generation, municipal authorities in the country seem unable to provide adequate collection and safe disposal of waste within their jurisdictions. As a result, urban centres in the country are saddled with solid waste management problem which have proven to be intractable and threaten public health and the environment. Like other Metropolises and Municipalities, the Berekum Municipality in Ghana is faced with solid waste management problems. Some efforts to mitigate these problems include; the Urban III project under which the government provided funds for waste-related activities. Other efforts include provision of waste collection bins, waste receptacles and communal clean-up exercises by residents and civil society organizations such as churches in the municipality. None of these efforts and strategies have been able to improve the sanitary conditions in the municipality. Thus, uncollected solid waste can be found in the streets, gutters, and other open spaces in the municipality. The main objective of this paper is to examine residents' perceptions and attitudes towards solid waste management, and their willingness to pay for improved waste management services in the Berekum Municipality of Ghana. The rest of the paper is organised as follows: conceptual issues on waste management is the subject matter in section two, while section three deals with the materials and methods, and the fourth, presents the results and discussion, the fifth section will conclude the paper.

Conceptual issues on waste management

This section of the paper discusses the conceptual issues involved in solid waste management, covering issues such as perceptions, attitudes and waste management; willingness-to-pay for waste management and; conceptual framework that informed the study.

Perceptions, attitudes and waste management

Perception is the primary process by which human beings obtain knowledge of the world. It involves the actions of our sense organs (sight, hearing, touch, taste and smell) in responding to external stimulation (Gibson & Tierney, 2006). Perceptions are influenced by our knowledge, resources, beliefs, values and norms but can be created without experience and knowledge of the object or person (Mariwah, Kendie & Dei, 2010).

Ajzen and Fishbein (1980), describe attitude toward a concept as a general feeling of favourableness or unfavourableness for the concept by an individual or group of individuals. Schultz and Zelezny (2000), define attitude by taking into account environmental concerns. They describe it as the deep rooted concept in a person's self with a perception of the degree of bonding between self and the environment. Attitude acts as an important antecedent to the behavioural intention which is described as the degree of favourable or unfavourable evaluation of the behaviour under study (Ajzen, 1991). Warner (2006) contends that there is no right or wrong attitude except within a certain cultural context. But even within the same culture, our behaviour can be influenced by a number of factors and these develop over time. Thus, a person willing to display a specific behaviour may undertake the cost benefit analysis as a consequence of the action undertaken (Cheng, Lam & Hsu, 2006). Ajzen (1991) emphasized that positive attitude towards a particular behaviour strengthens the intention to perform that behaviour.

Attitude has been found to be an important predictor in explaining intention or behaviour towards solid waste management and the relationship are significant (Ifegbesan, 2010; Kumar, 2012). Attitudes may be positively influenced through awareness building campaigns and education about the negative aspects of inadequate waste collection with regard to public health and environmental conditions. Such education should also inform people of their responsibility as waste generators and of their rights as citizens to adequate solid waste management services (Bernstein, 2004). Vicente and Reis (2008) has revealed that attitude towards waste recycling has positive influence on the participation of households. Goh, Tong and Ahmed (2013) also provided empirical evidence that attitudes were found to have moderating effect on intention to recycle waste in Malaysia. Thus, the design and implementation of municipal solid waste management system require an analysis of existing behaviour of key stakeholders, including their attitudes, perceptions, and values. The underlying attitudes of the urban population are themselves influenced by the social and cultural contexts. Programmes to disseminate knowledge and skills or to improve behaviour patterns and attitudes regarding waste management are based on sound understanding of the social and cultural characteristics of the people.

Bernstaen (2004) asserted that fast growing, low-income residential communities are often characterised by diverse social and ethnic groups. Bernstaen argued further that these social diversities strongly influence the capability of communities to organise local waste management. Moreover, people are more concerned about waste when it is at their immediate environs (Bernstein, 2004; Klundert & Lardinois, 2005). Some residents dump waste indiscriminately into open places, drains and gutters, thereby choking the drainage and creating fertile grounds for breeding of mosquitoes. Some commentators blame these negative attitudes on poverty. It is quite understandable that improved incomes allow people to invest more in waste collection (Telfer, 2002). However, without demeaning the poor, one does not have to wait for income improvement before avoiding the habits of littering or illegal dumping; practices which have serious health consequences on the health of people.

Willingness-to-pay for waste management

Municipal solid waste management is an integral part of the broad urban and environmental management of a city. To maximize the efficiency and effectiveness of investments in this sub-sector, the full range of solid waste operations and the related environmental, institutional, and financial issues must be addressed (Bernstein, 2004). Willingness-to-pay (WTP) for waste management services or facilities is very important to the success of the private sector's participation in the municipal solid waste management programme. The willingness to pay or not to pay could have direct impact (positive or negative) on the effectiveness of any solid waste management strategy (Rahman, Salequzzaman, Bahar, Uddin, Islam & Hrun, 2005). The question therefore has to do with the economics of household waste management,

especially, in a developing economy like Ghana. A number of models have been proposed on this issue. One of the models was proposed by Linderhof, Kooreman, Allers and Wiersman (2001) who based household waste collection charges on weight-based pricing in Oostzaan, Holland, where the optimal fees for household waste collection was equal to the direct resource costs plus external environmental costs. Such a pricing cannot be used in developing countries where the actual volume of household waste arising is not known (Longe & Ukpebor, 2009).

Most often, charges for household waste collection by government are based on direct charges of household. The amount to be paid by households for their own waste removal is not based on the volume of the waste generated but rather on the location and type of household. In a study on households' WTP for improved solid waste management services by Mariwah, et al (2010), more than half (57%) of the respondents in the Shama-Ahanta-East Metropolitan Area of Ghana were not willing to pay for waste management services. Reasons given by the respondents included poor existing services and payment of taxes. A similar study by Ojok, Koech, Tole and Okot-Okumu (2012) found that less than half (48%) of households in Kampala were WTP for improved solid waste management services. Wang, He and Kamata (2011) conducted economic analysis of municipal solid waste management in Eryuan, located in Yunnan Province, China. Their analysis showed that the poorest households in Eryuan, in general, are not only willing to pay more than the rich households. In a study on urban households' WTP for improved solid waste disposal services in Kumasi Metropolis, Ghana, Dadson, Shaibu and Godfred (2013) found that 57 percent of residents were willing to pay for improved services. Reasons advanced by these who were unwilling to pay included the absence of waste management service providers in the area and the fact that is the responsibility of the government to pay for waste management. When it is perceived that waste management is the responsibility of the government people will not be WTP for waste management services rendered to them. It, therefore, behoves authorities to pay keen attention to problems arising from the management of solid waste and put in place measures to address such problems.

Conceptual framework

This paper is guided by Ajzen's (2002) Theory of Planned Behaviour (TPB), which provides a framework for studying human action (Figure 1). According to Ajzen (1991), there are three conceptually independent predictors of human behaviour namely behavioural beliefs, normative beliefs and control beliefs. Behavioural beliefs are beliefs about the likely outcomes of the behaviour and the evaluations of these outcomes. Normative beliefs constitute beliefs about the normative expectations of others and motivation to comply with these expectations. Beliefs about the presence of factors that may facilitate or impede performance of the behaviour, subjective norms and perception of behaviour make up control beliefs.

A person's intention to exhibit a particular behaviour is a fundamental factor in TPB. As a general rule, the more favourable the attitude and subjective norm, the greater the perceived behavioural control, the stronger should be a person's intention to engage in a given behaviour (Ajzen, 1991). Intentions are, thus, assumed to be the immediate antecedent of behaviour. TPB also assumes that perceived behavioural control, in company with behavioural intention, can be utilized directly to predict behavioural achievement (Tekkaya, Kilic, & Sahin, 2011). Thus, in order to better explain the nature of human behaviour, attention should focus on the antecedents of attitudes, subjective norms, and perceived behavioural control, which in turn account for intentions and actions. To this end, the TPB portrays that an individual's behaviour is a function of beliefs pertaining to that specific behaviour.

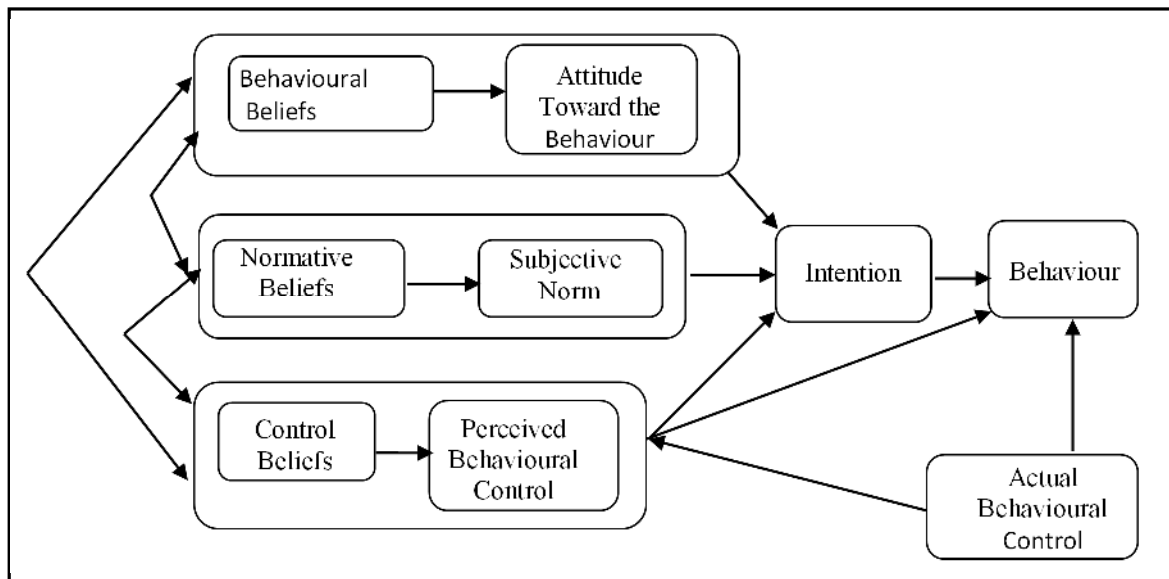


Figure 1: Theory of Planned Behaviour

Source: Ajzen (2002)

The present study employed the TPB largely because perceptions, like behaviour, are influenced by our knowledge, beliefs, values, and norms but can be formed without experience and knowledge of the person. Thus, the more knowledge we have on sanitation, the clearer our opinion tends to be, and the stronger our (feelings) perception. Besides, being informed about an issue is even more likely to influence behaviour when knowledge is gained from first-hand experience (Fazio & Zama, 1981 cited in Mariwah et al, 2010). Thus, a household WTP for waste management is influenced by their perception towards waste management.

Materials and Methods

This paper is based on a study conducted in the Berekum Municipality, an urban area in the Brong Ahafo Region of Ghana. The Municipality came into existence as a semi-autonomous spatial unit by virtue of the decentralisation policy adopted by the Government of Ghana in 1988 (Figure, 2). Located in the Brong Ahafo Region, it covers a total land area of about 1,635km². The Municipality shares boundaries with the Wenchi Municipality and the Jaman South District to the north and northwest respectively, Dormaa Municipality to the west and Sunyani Municipality to the east. Berekum, the municipal capital, is about 32km away from Sunyani, the Brong Ahafo regional capital (ghanadistricts.com, 2011). The population of the municipality is about 129,628 out of which 40 per cent live in the rural areas while 60 per cent live in the urban centres (Ghana Statistical Service, 2012). The Berekum Municipality was selected on the basis of its population size, economic activities and the amount of waste generated by residents. There are pockets of ‘Refuse Mountains’ within the built up environment which need to be removed to prevent any future outbreak of diseases.

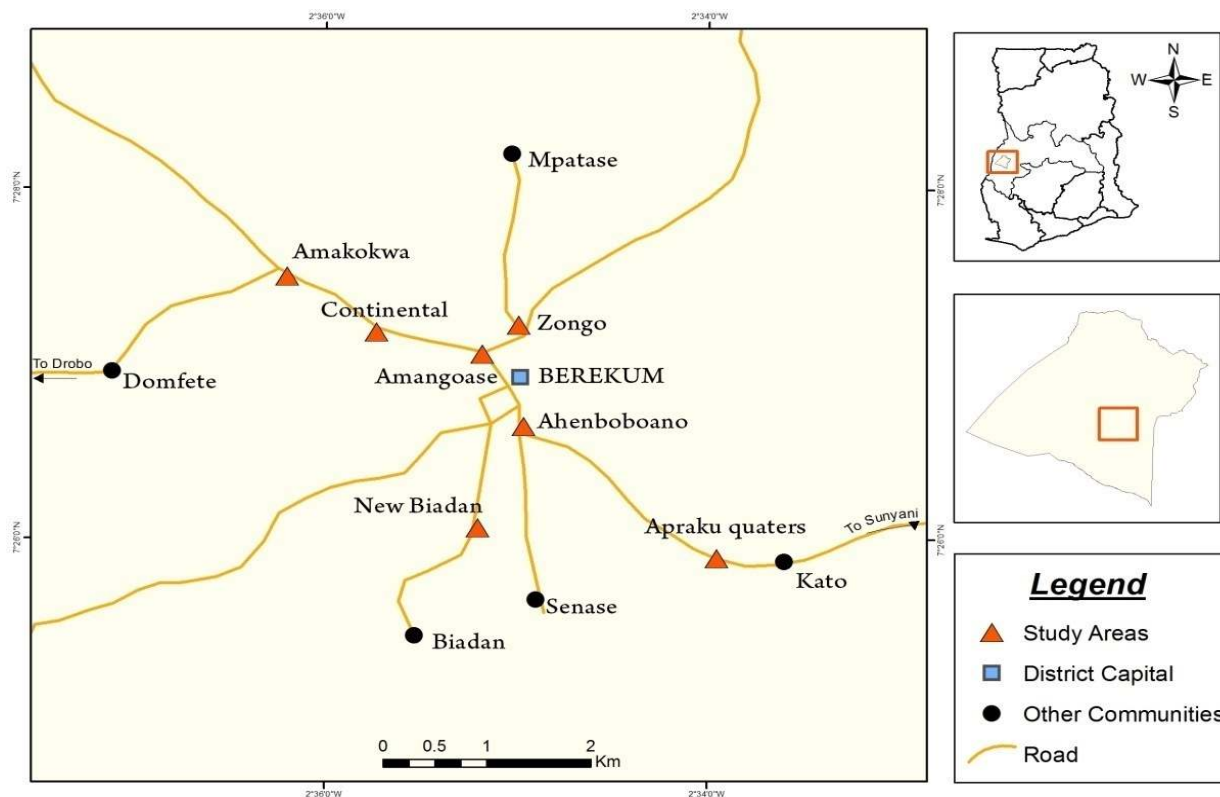


Figure 2: Map of Berekum Municipality showing study areas

Source: Cartography Unit, Department of Geography and Regional Planning, UCC (2013).

The study employed the mixed method approach which involves the triangulation of qualitative and quantitative data collection concurrently. Triangulation deals with collecting and analysing both quantitative and qualitative data in a single study (Creswell, 2003). Problems usually associated with research that relies solely on one theory, single method and single data set are avoided when triangulation is employed (Neuman, 2003). Hence, the interview schedule, in-depth interview guide and observation checklist were used to collect primary data from the field. The quantitative data was collected from households in the Berekum Municipality while qualitative data was sought from key informants, including the Environmental Health Department, opinion leaders such as chiefs, Assembly Members and waste management companies. The inclusion of key informants was necessitated by the major role they play as stakeholders in ensuring a clean environment in the municipality. Due to the complex nature of disposal and collection of solid waste in the municipality, the use of both quantitative and qualitative techniques enhanced the chances of getting more reliable data and minimised the chances of biased findings.

In all, 155 respondents were engaged in the study. This included 150 household respondents and 5 key informants. For studies on environmental behaviour that apply the TPB, a sample size of between 100 and 200 respondents have been found to be appropriate (Mensah & Whitney, 1991; Cheung, Chan & Wong, 1999; Ewing, 2001; Ifegbesan, 2010; Tekkaya, Kilic & Sahin, 2013). On the basis of income, communities in the municipality have been classified by the Berekum Municipal Assembly (2011) as high income, middle income and lower income areas. A stratified sampling procedure was used to select respondents to reflect these urban residential typologies. Two communities each were randomly selected from the high and middle income communities while three were selected from the lower income communities, since there were more low income communities compared to those other income groups. The high-income communities were Apraku Quarters and Continental. New Biadan and Ahenboboano were the middle

income communities while the lower income communities consisted of Zongo, Amankokwaa and Amangoase.

In order to get the respondents for the study, 80 houses were selected from the low income communities, 50 from the middle income communities and 20 from the high income communities. This was done based on the population size of each of the selected communities. It was observed during the reconnaissance survey that the lower income communities in the municipality had more people compared to the middle and high income communities. Thus, a significant proportion of the respondents were allocated to the low income communities, with least allocated to the high income communities. The systematic sampling and simple random sampling techniques were employed to select household respondents. Relying on the number of houses for each of the sampled community, a sample interval was calculated for each community based on total sample size of 150 houses. Based on the sample interval for each community, respondents in the various housing units were selected for the study. Thus, after a random start, every housing unit that correspond with the sample interval for each community was selected. For houses with more than one household, the lottery method of the simple random sampling technique was applied to select one of the household. This procedure was done repeatedly until the sample assigned to each community was exhausted.

Since people's waste generation and disposal patterns are influenced by those of their neighbours (Nie, 2007), the selection of one household from each house was deemed appropriate. Therefore, in each selected household, the principal homemaker, who was usually a female, was selected to respond to the interview schedule. In the absence of the principal homemaker, an adult member of the household was randomly selected for the study. In addition to the household respondents, purposive sampling technique was employed to select 5 key informants; one opinion leader, two assembly members, one staff from the environmental health department of the municipal assembly and one official from the waste management companies. The Statistical Product and Service Solutions (SPSS, version 17.0) software programme was used to analyse the data. Responses from the in-depth interview guide was categorised into appropriate themes and analysed manually.

Results and Discussion

This section of the paper presents the key findings of the study. It is organised under three broad themes viz: demographic characteristics of respondents, attitudes and perceptions towards urban solid waste and WTP for improved solid waste management.

Background characteristics of respondents

The background characteristics of the respondents covered their sex, age, level of education and income. The rationale was to identify the socio-demographic characteristics of the people involved in solid waste generation in the Berekum Municipality.

Table 1: Socio-demographic background of respondents

Variables	Sex		Total (%)	N
	Male	Female		
Age (years)				
21-25	5.3	6.0	11.3	17
26-30	2.0	12.0	14.0	21
31-35	4.7	13.3	18.0	27
36-40	5.3	21.3	26.7	40
41-45	4.7	14.7	10.0	22
46-50	1.3	6.7	8.0	12
51-55	1.3	2.7	4.0	6
56-60	1.3	2.0	3.3	5
Total (%)	26.0	74.0	100.0	
n	39	111		150
Level of education				
None	0.0	14.7	14.7	22
Basic	7.3	34.7	42.0	63
Secondary/vocational/technical	0.0	14.0	14.0	21
Post-secondary/non tertiary	4.0	5.3	9.3	14
Tertiary	14.7	5.3	20.0	30
Total (%)	26.0	74.0	100.0	
n	39	111		150
Income (GH¢)				
< 50	17.3	19.4	36.7	55
50-100	18.2	15.1	33.3	50
101-200	2.0	0.0	2.0	3
201-300	3.5	1.2	4.7	7
301-400	8.9	1.8	10.7	16
400 and above	11.6	1.0	12.6	19
Total (%)	61.5	38.5	100.0	
n	92	58		150

Source: Data Analysis (2012)

The results from Table 1 indicate that out of the 150 respondents, females constituted the majority (74%). The selection of more females than males in a study of this nature was influenced by the common knowledge that in a traditional Ghanaian setting, waste management and by extension household management are the responsibilities of females. The age of respondents ranged from 20 to 60 years with the mean age being 36.7 (Table 1). Overall, respondents within the age cohorts 36-40 constituted the majority (26.7%). A significant proportion (85.3%) of the respondents had some formal education (Table 1). Forty-two percent of them had basic education, whereas 14 percent had secondary/vocational/technical education. Education is expected to have positive and significant effect on waste management. Thus, the longer period the individual spent in formal school system, the more likely that he/she would be willing to pay more for improved waste management. With majority of respondents having formal education, they were well informed about the negative impacts of waste on their health and well-being and hence were expected to develop positive attitude and perceptions towards solid waste management.

The monthly income distribution of the respondents revealed that 36.7 percent of them earned less than GH¢50 (1\$=GH¢2.55) month while a third (33.3%) earned between GH¢50.00 and GH¢100.00. Only 12.7 percent of the respondents earned GH¢400.00 and above. Males earned more than females in each of the income bracket. Thirty-seven percent of respondents (i.e. those who earned less than GH¢ 50.00 a month) may be unwilling to pay for waste services since their income is relatively low compared to the regional average income of GH¢54.3, a situation that can hinder effective waste management in the Berekum Municipality.

Attitudes and perceptions towards urban solid waste

The issue of what constitute environmental problem varies from person to person hence, respondents were asked to indicate the most serious environmental problem from a list of social and environmental issues in their locality (Figure 3). The most serious environmental problem to most of the respondents was that of solid waste (40.2%) followed by pollution of water bodies (26.4%). Thus, a greater number (40.2%) of respondents indicated that solid waste is a major environmental problem in their communities and this supports Chazzan’s (2002) finding that most cities in the developing world are drowning in waste. However, it was observed that the solid waste problem was more paramount in the middle and low-income communities. Earlier, Mensah and Larbi (2005) confirmed that the waste management problem is more serious in low-income residential areas.

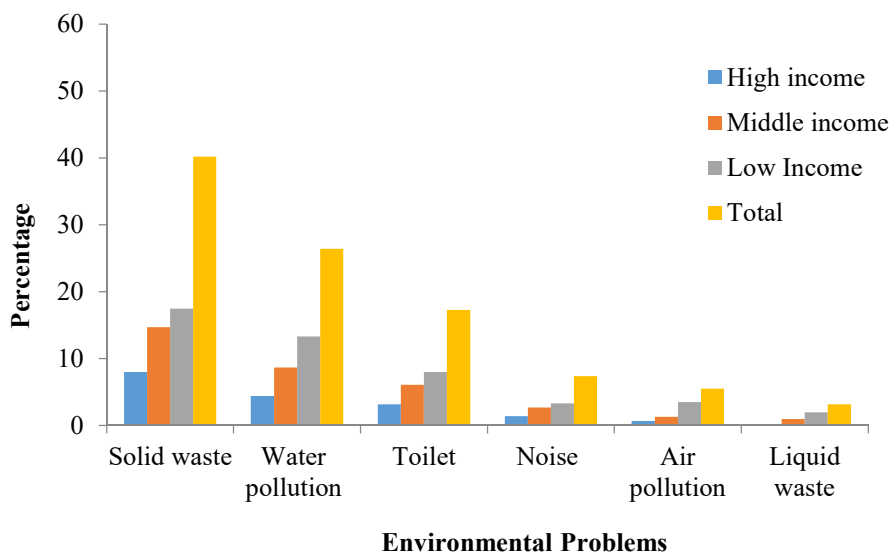


Figure 3: Respondents’ perspective on most serious environmental problems

Source: Data Analysis (2012)

Meanwhile, officials of the Municipal Environmental Office and the private solid waste company estimated that about 18 containers (1,800 tonnes) of waste were lifted in a day but could not estimate the amount generated in the respective communities. The opinion leaders, including assembly men who were interviewed pointed out that open burning and indiscriminate dumping in gutters and streets were common in low-income communities. For example, one of the assembly members stated:

The people are the biggest problem when it comes to waste management in the municipality because they sweep and dispose the waste into gutters and also at the back of their house. Even at the refuse dump sites, waste are dumped anywhere. There are about five sachet water producers in the municipality but they also do not provide litter bins and as a result, sachet water bags can be found all over the place.

On the causes of the solid waste problem the results, as presented in Figure 4, shows that more than half (52.7%) of the respondents found inadequate bins in their respective communities as the main cause of the solid waste problem. Moreover, 44 percent of the respondents identified long distances to dumping sites as a factor that contributed to the solid waste problem while two percent mentioned the absence of dump sites. Again, inadequate bins and long distance were more common in low-income areas. The reasons given as the major factors for the solid waste problem is a clear indication that in developing countries, solid waste services have suffered neglect and low prioritization compared to other municipal services (Poswa, 2000; Scharfe, 2010).

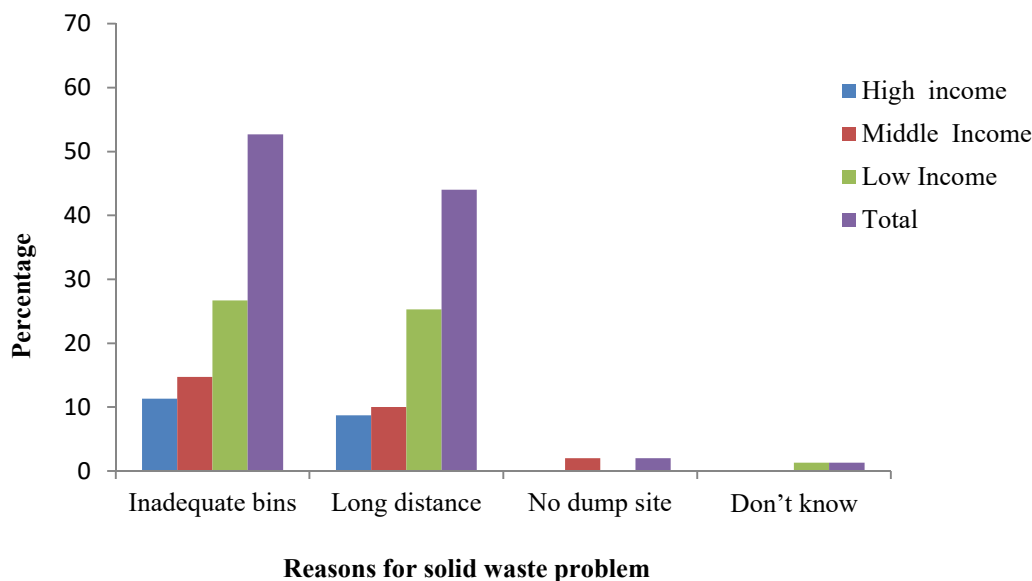


Figure 4: Reasons for the solid waste problem

Source: Data Analysis (2012)

Meanwhile, an officer from a waste management company reiterated that:

People dump waste at unauthorised places as a result of political reasons because some people decide to litter waste just to make the government unpopular. The attitude of people is also a factor because people intentionally litter waste on the false assumption that if they don't litter waste those responsible for managing waste will not have work to do. Lack of education on proper waste disposal and management is also a major contributory factor and we don't have enough money to regularly go on the radio to educate people.

From the perspectives of stakeholders in the waste management sector, there was no consensus on the major factors responsible for the solid waste problem in the municipality. This notwithstanding, the most prominent problems that emerged were inadequate funding and logistics, a situation which is supported by Poswa (2000) that solid waste problems emanates from inadequate government financial support on sanitation. Other problems such as poor attitudes of people, lack of education, political influence, inadequate waste management companies and improper maintenance of waste disposal facilities were enumerated. This is in accordance with the assertions by Hardoy (2001) and Pacione (2005) that financial and logistical constraints are the key constraints to effectively managing solid wastes, particularly in developing economies. In this respect, a remark by an official of the Municipal Assembly on the reasons for the solid waste problem in the municipality is worth mentioning:

The waste management problem is more serious in the municipality because the only private company responsible for collection and disposal of waste does not have enough facilities. The Municipal Assembly which is supposed to liaise with this company has only two vehicles which are not properly maintained and hence break down all the time.

The TPB described normative beliefs as beliefs about the normative expectations of others and the motivation to comply with these expectations. Having ascertained the seriousness of solid waste problems and the causes, the study further investigated the communities' expectations of the nature of solid waste management problems in the next five years. From Figure 5, it can be inferred that the majority (81.3%) of the respondents expected that in the next five years the problem of solid waste was going to deteriorate even further. However, the higher level of expectation of the solid waste problem by residents in the low income communities (46%) is in conformity with the assertion by Bernstein (2004) that fast growing low-income residential communities may comprise considerably diverse social and ethnic groups, and social diversity strongly influences the capability of communities to organise local waste management.

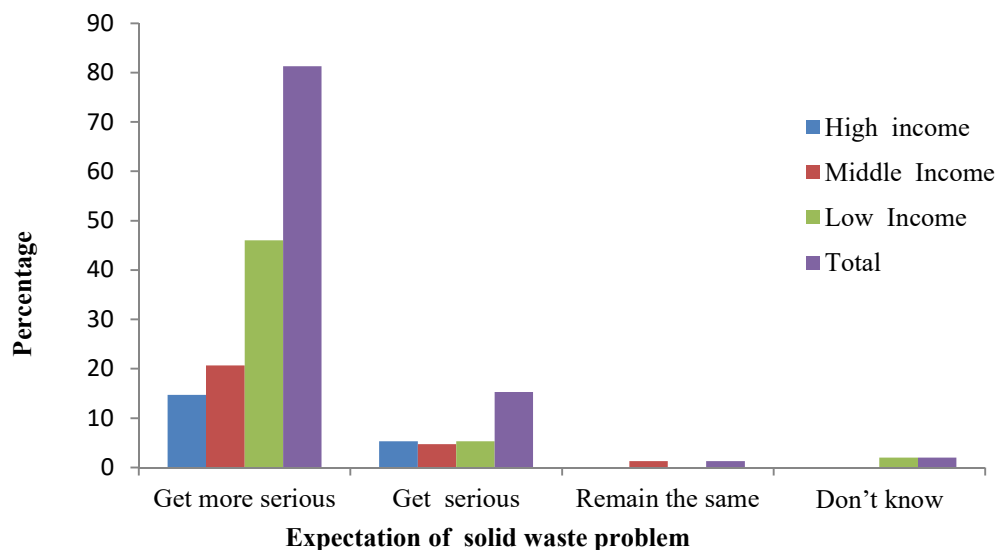


Figure 5: Expectations of solid waste problem in the next five years

Source: Data Analysis (2012)

Residents' willingness-to-pay for solid waste management

Willingness-to-pay for waste management services is important to both private and public sector participation in the municipal solid waste management programme. The willingness-to-pay or not-to-pay could have direct impact (positive or negative) on the reliability and success of any solid waste management strategy (Rahman et al., 2005). A significant proportion (92%) of residents indicated that waste collection services were provided in their locality. However, the majority (98%) showed that they did not pay for the services rendered to them. Meanwhile, the two percent who said they paid for the service could not indicate the exact amount they paid hence; it was a clear indication that actually, the residents enjoyed free service with respect to collection of solid waste from their locality. This might have contributed to low financial and logistical capacity of the waste management institutions to perform effectively. Meanwhile, it can be seen from Figure 6 that more than two-thirds (69.3%) of the respondents were willing to pay for improved services. For the respondents who were willing to pay for improved services, 91.3 percent, 17.3 percent and 32.7 percent were in the high income, middle income and low income groups respectively.

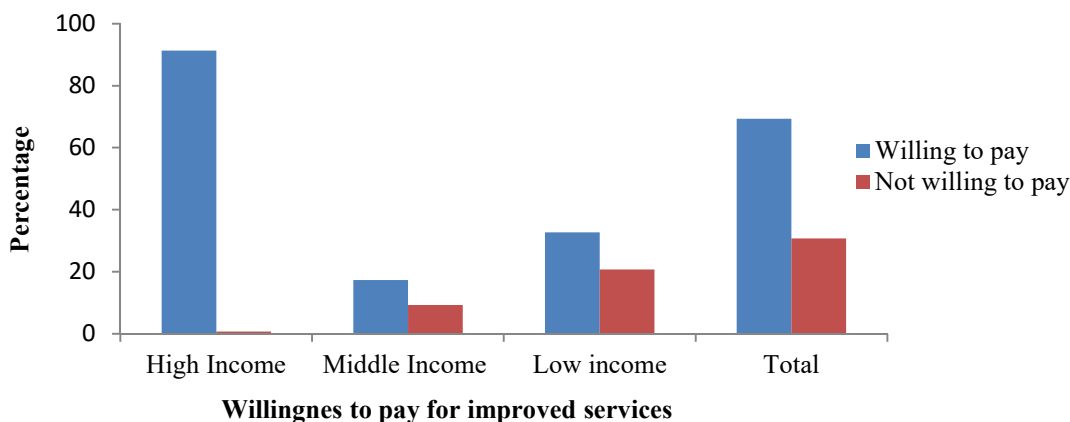


Figure 6: Residents WTP for improved services

Source: Data Analysis (2012)

However, about a third (30.7%) of the respondents expressed their unwillingness to pay for improved services. Subsequently, attempts to ascertain the underlying reasons why some residents were not WTP for improved waste management services (Figure 7) revealed that a greater proportion (35.7%) were not willing to pay because their incomes were low. Nearly 30 percent (28.6%) of the residents were of the view that they were not working, while a similar proportion felt that it was the responsibility of government to pay for the collection and management of waste.

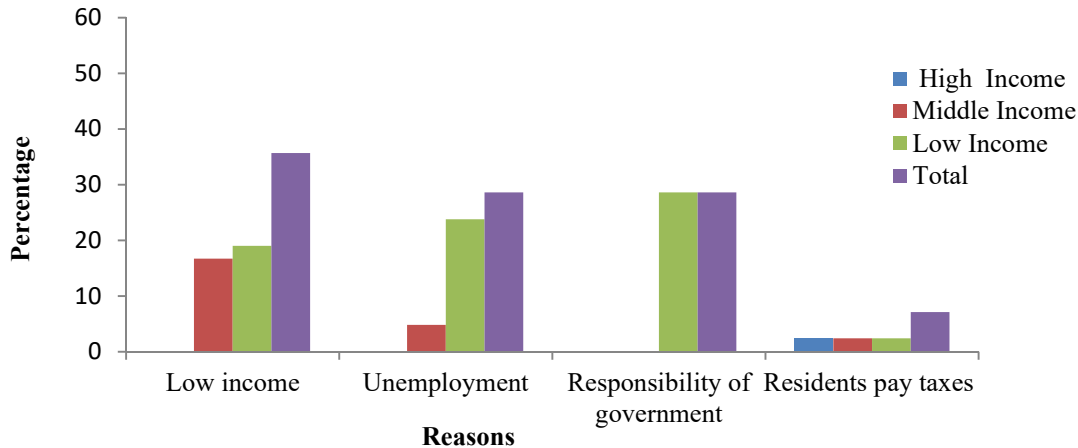


Figure 7: Reasons for unwillingness to pay for improved services

Source: Data Analysis (2012)

Analysis of residents' WTP for improved services helps to establish the actual behavioural control of residents. This is exemplified in the TPB, the conceptual framework for this study where the combination of the three considerations: attitude towards the behaviour; subjective norms and perception of behavioural intention were, found to guide the individual to form a behavioural intention (Ajzen, 2002).

Conclusion

This paper has established that the Berekum Municipality faces solid waste management problems due to inadequate collection bins, poor attitude of residents, lack of public education, political influence and improper maintenance of waste facilities. As a result, waste generation surpasses the capacity of waste management companies for waste collection and disposal. The solid waste problem is expected to get worse in the next five years considering the fact that communities in the municipality were expanding and without corresponding increase in waste facilities and services. Even though residents did not pay for waste management services, they were willing to pay for improved services.

To ensure effective and efficient waste management in the Berekum Municipality, some key recommendations are made. First, waste management institutions should be adequately resourced by the central government through the Assembly. The Waste Management Department of the Assembly should liaise with other corporate bodies and financial institutions to solicit funds in order to support the waste management companies in the municipality. Second, there should be public education on proper ways of waste disposal in the municipality to sensitize the general public on the benefits of a healthy environment and the need to keep their communities clean. Stakeholders involved in waste management, including private waste companies, sachet water producers and the Environmental Health Department should team up to educate residents through various media such as radio stations, schools, churches and in mosques. Finally, there should be an introduction of user charges so that residents will pay for the waste management services they enjoy. As residents are willing to pay for improved services, the user charges should take the form of pay-as-you-dump. This would control the rate at which residents generate waste in the municipality. This should be carefully thought through since poorly planned introduction of user fees can lead to illegal dumping by those who cannot afford the fees.

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