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PRIVATE SECTOR PARTICIPATION IN SOLID WASTE MANAGEMENT: THE CASE OF LEDZOKUKU-KROWOR MUNICIPAL ASSEMBLY, ACCRA - GHANA

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ABSTRACT

The study sought to assess the contribution of Public Private Partnership (PPP) on Waste Management System in Ledzokuku-Krowor Municipal Assembly in the Greater Accra region of Ghana. As a result, structured, semi-structured questionnaires and interviews were employed in both Accidental and Purposive sampling techniques to seek the views of 80 Household Respondents and 20 Management Officials of Private Waste Management Companies, Opinion leaders and Officials of the Municipal Assembly. Although, the Community members described the waste situation in the study area as well below requirement, achievements of Private waste management companies in the study area included ensuring tidy surroundings (30 %), placement of adequate numbers of bins (15 %), alleviated indiscriminate refuse dumping (25 %) and overall reduction in the quantities of municipal waste (30 %). These contradictory statements perhaps suggested the inconsistency of the achievements of such private companies with the study revealing poor or delays in payment as a key challenge for the Private companies and therefore underscored the need for Governments to inject more and adequate funds into solid waste management as well capture waste management in every developmental budget. Creating competition among Private Waste Collection Companies both at the tendering stage and during operations and doing away with monopolies in contract offers by local Government are also critical.

Keywords: Waste management, Solid waste, Public Private Partnership, Sanitation, Integrated, Participation.

INTRODUCTION

Overpopulation, rapid urbanization, rising earning levels with the ever changing consumer lifestyles as well as industrialisation have influenced the types and quantities of most communal wastes bemoaned by the World Bank (World Bank, 1999; McMichael & Beaglehole, 2000). Urban areas continue to suffer situations where the majority of the people migrate into the cities at a very rapid pace worldwide. The search for greener pastures and a good living are some of the reasons for such movements. According to (M. Oteng-Ababio, 2010^a; 2010^b),

increasing number of people in urban areas results in overpopulation and with diverse ways of living, larger quantities of solid waste is what continues to overwhelm a lot of municipalities.

In recent times, efforts to effectively handle municipal solid wastes at a much affordable price are often challenged (World Resources Institute, 1998); Habitat, 2010). According to (Birdie, G. S., & Birdie, 2003), solid waste management describes a combined process of handling waste, which comprises regulation of its generation, storing, assemblage, transferring and transporting, recycling waste or disposing waste in a state that would not cause detrimental effects on the environment using best techniques and practices. This means that in as much as waste management should be carried out, it should be done in a manner that people are able to pay for the service provided to make the system a sustainable one.

LITERATURE REVIEW

Municipal solid wastes left uncollected in the surroundings have been documented to compromise public health. Ilankoon et al. (2018) agree with the above statement by indicating in their studies that improper waste management is a worldwide issue that requires control. It is also very important to safeguard human health from hazards that will arise from environmental pollution as a result of poor waste management in the area of landfilling (Ilankoon et al., 2018). A number of such public health challenges encountered include illness such as cholera, typhoid, dysentery, worm infestations, malaria, respiratory diseases and possibly death (Oteng-ababio et al., 2013).

Saravanan et al. (2017) reiterated that it is crucial to maintain a good eco-friendly nature and have come up with the idea of destruction of waste pollutants in the atmosphere because the environmental pollutants occur in different forms of untreated hazards when they are disposed of as materials into water, land, or air. Municipal solid waste disposed of indiscriminately often, apart from the fact that it destroys the aesthetic beauty of the environment, blocks drains resulting in serious floods whenever there is heavy downpour in most urban areas (Al-khatib et al., 2009). To reduce poor aesthetic beauty as well as flooding relating to poor waste disposal practices. Alam et al. (2009) propounded waste minimization as one of the surest ways to manage waste. In their view waste minimization helps to reduce cost both to the waste producer and the authorities that manage the waste. This will contribute to salvaging materials that can be reused. Municipal Authorities in the past were responsible for the handling of municipal solid waste when most diseases were found to be linked to indiscriminate waste dumps and refusal or untimely collection of piled waste (Oteng-Ababio et al, 2017).

To ensure an effective management system, the concept of private sector participation was introduced to support government in handling almost all the processes involved in solid waste management. Key amongst them being refuse collection, recycling and resource recovery to complement the efforts of government (UN Habitat, 2010; World Resources Institute, 1998). Nijkamp et al. (2002) described a public private partnership as the one involving the joint forces of both parties in achieving a target objective. Achieving a project's goals and making it robust and more sustainable one needs concerted efforts from all and a diverse spectrum of stakeholders for which the private person cannot be underestimated.

Solid Waste management continues to be a matter of discourse in Ghana as the generation of large quantities of solid wastes poses lots of health challenges and as such the need for serious and quicker moves to mitigate the situation. Government through the Metropolitan, Municipal and District Assemblies (MMDAs) continues to play its role in solid waste management

processes. The contribution of Private firms is critical, as their partnership would augment the efforts of Government in championing this course.

This study therefore sought to assess PPP in solid waste management in Ledzokuku- Krowor Municipal Assembly of the Greater Accra Region of Ghana. Key specific objectives set to achieve are 1. To investigate and describe the nature of waste situation in the Ledzokuku-Krowor Municipality; 2. To ascertain and describe the nature of private sector participation in solid waste management in the Ledzokuku- Krowor Municipality; 3. To find out the challenges associated with private sector participation in waste management in the study area.

The results of this study will furnish MMDAs, Policy Makers, NGOs, the Public domain and all key stakeholders with the state of affairs concerning solid waste in the study area. Outcome of this research will update and broaden the knowledge base on the matter of concern. It will further guide critical decision making on the subject under discussion by policy makers.

METHODOLOGY

Description of the Study Area

The research was carried out in Ledzokuku - Krowor Municipal Assembly (LEKMA), which is one of the municipal assemblies in the Greater Accra Region of Ghana. The municipal assembly was carved out of the Accra Metropolitan Assembly (AMA) and established under the legislative instrument (LI 1865) on 1st November 2007, but inaugurated on 29th February 2008. In terms of content, the study focused on the role of private sector participation in solid waste management in LEKMA. According to the 2010 Ghana Population and Housing Census data from the Ghana Statistical Services, the total estimated population of LEKMA was 261,571 (Sowah and Manga, 2010). The municipal assembly has boundaries starting from its southern area, to the Gulf of Guinea from the Kpeshie Lagoon to the Mukwe Lagoon near the Regional Maritime University. The boundary continues along the Maritime road and join the Accra-Tema road to Nungua Police Barrier. It turns right to the Ashaiman road and continues to Lashibi Junction, branches left on the Spintex Road and moves all the way through the Coca Cola Roundabout to the Kwame Nkrumah Motorway. From there it continues left along the motorway and branches south near the East Legon tunnel and moves south towards the starting point eventually ends at the Kpeshie Lagoon.

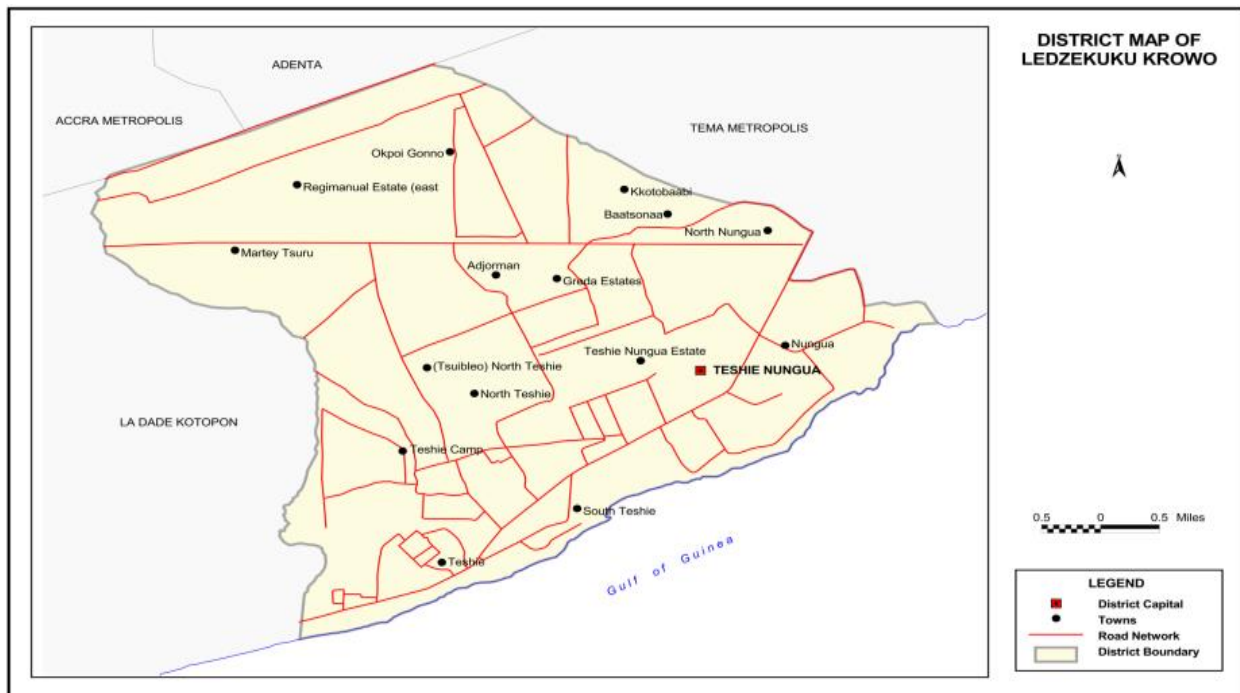


Fig. 1: Annotated map of LEKMA (Source: Sowah & Manga, 2010)

The rapid urbanization of the municipality has led to high volumes of generated waste, which have become a major challenge to the assembly. It is estimated that about 750 tonnes of solid waste is generated monthly out of which 490 tonnes are collected representing 65 % out of which 81 % is collected by the private sector through household services and communal waste collection (Waste management Unit, 2011).

Solid waste management professionals realised that the ideal option to reduce the stress on solid waste disposal systems is to reduce the amount of solid waste that is produced, thus, the Integrated Solid Waste Management (ISWM) model lays emphasis on 3Rs (Recycle, Reuse, and Reduction (Yakubu & Zhou 2018; Yakubu, Y., Zhou J., & Luo, 2016; Tchobanoglous & Kreit , 2002) further explained that the selection and application of appropriate techniques, technologies, and management programs to achieve specific waste management objectives and goals is important since this can then be termed as true definition of integrated solid waste management.

Sampling and Sample size

The target population comprised private waste companies in LEKMA, service recipients (residents), planning officers and waste management officers and opinion leaders such as assembly members. These officials were targeted because their work is closely related to the management of waste within the municipality. The mixed method sampling technique (quantitative but also qualitative) was employed in the study using a sampled size of 80 household Respondents and 20 management officials of private waste management companies, opinion leaders and officials of the municipal assembly. The target respondents were service recipients of ages 10 upwards. This age range was selected because mainly children do the handling of waste in Ghana at the household level. Stratification of the Municipality was based on the existing nine electoral areas -Hedzoleman (Teshie-Nungua), Martey Tsuru-Teshie, North Teshie, Nungua, South Teshie, Teshie, Teshie/Nungua Estates, Teshie Military Zone, Teshie-Wajir Barracks with equal respondents of 9 each except the Teshie Military Zone where

8 respondents were selected.

Data collection

Structured and semi-structured questionnaires were used to collect data for this study. Since the study employed a mixed method technique, the structured questionnaires was appropriate in collecting quantitative data while semi structured questionnaires provided the opportunity to have interview sections with some key informants. The questionnaires were divided into two sections. Section A described respondents' background information. Section B, on the other hand dealt with private waste service provision covering the thematic study objectives. The questionnaire for assembly staff contained few questions that sought to get in-depth knowledge on the private agencies involvement in waste service provision within the municipality. Even though questionnaires were the main research instrument, direct observation was also used. To ascertain the validity and reliability of the questionnaires, pre-test was conducted at Nungua Adogono and Teshie old Town, both suburbs within the municipality with 30 questionnaires. This was done to ensure the feasibility of questions asked and to avoid ambiguous questions so that two or more respondents would understand the same questions asked in the same way. In all, the questions proved to be reliable and feasible. The pre-testing gave the opportunity for certain pertinent issues, which could not be captured initially to be included in the final questionnaire.

Data Management

Completed questionnaires from the field were edited and coded appropriately to make meaning out of them. Editing was done to correct errors, check for non-responses, and accuracy. Coding was done to facilitate a comprehensive analysis of the data. To arrive at the intended analyses, the participants' responses were keyed into SPSS version 16.0 software and several sets of statistical analyses were performed: frequency tables, percentages and their interpretations were thoroughly explained. The responses from the semi-structured questionnaires incorporated into the discussions of the questionnaires.

RESULTS AND DISCUSSIONS

Demographic Characteristics of household respondents

The demographic characteristics of household respondents indicated that out of the 80 households sampled, 52 (65.4 %) males and 28 (34.6 %) females participated. The irony here is that though issues of domestic waste are largely handled by women as a traditional role in Ghanaian communities, fewer women were represented or the data skewed towards men rather than women. The unit of analysis was not individuals but household, as a result, the researchers had limited capacity in ensuring a balanced gender representation. However, changing trends of the Ghanaian society is altering the traditional norms and roles and hence more men are seen playing roles hitherto held by women and vice versa. Therefore, having the data skewed towards men will not necessarily affect the outcome of the results. In addition, 13.6 % of respondents had basic education while 33.3 % had secondary education. Majority of the respondents, 45.7 % had tertiary education while 7.4 % had no education. The educational level of the respondents was high; hence, information provided was sufficient to make conclusions.

Waste situation in LEKMA

In a study, (Oduro, 2004) stated that informal commercial areas in Ghana such as markets and lorry stations have appalling environmental conditions due to lack of regular cleaning and solid waste removal by city authorities and their contractors. This study is highly comparable to the situation observed in LEKMA. Depicting a similar picture of the problem, (Cointreau,

2001) estimated that in some cases, up to 60 percent of solid waste generated within urban centres in poor countries remains uncollected and such refuse accumulates on wastelands and streets, sometimes to the point of blocking roads. Even though within the case municipality it was identified that there were private waste collectors and private waste companies' working, some areas received irregular cleaning and emptying of waste containers. Despite the appalling situation observed, respondents from the waste management department of LEKMA described the solid waste situation as manageable (Table 1).



Fig. 2: Heap of refuse at Teshie Tebibino (Source: field observation, 2018).



Fig. 3: Heap of refuse at Nungua fertilizer decommission site smouldering.

Table 1. Respondents' views on waste situation in LEKMA

Respondents'	Description
Waste management department	Manageable
Private waste companies	Average managed
Community members	Well below requirement
Informal waste collectors	Threatening

Source: Fieldwork, 2018

Direct observation moreover showed that there is a constant increase of solid waste within the municipality. Private waste management companies and informal waste collectors who were interviewed confirmed this observation, stating that almost every day there were differences in the solid waste they collect. Undoubtedly, population dynamics and economic activities have significant impacts on the volume of solid waste generated in a city and this has been the case in LEKMA. Over the years, rapid urbanization in Ghana has resulted in the concentration of populations and businesses in the major cities of the country. The respondents from the district assembly mentioned that population increases have affected their solid waste management system. They observed that there has always been an explosion of population increases in the municipality. The respondents did not state the exact figures of such increases but a cursory look at the expansion of settlements was an indication of a constant increase in the city's population. This observation supports the assertion made by (Onibokun, A. G. & Kumuyi, 1999) that changes in a population and its dynamics, such as changes in lifestyles and consumption patterns, could bring about changes in the types and levels of solid waste generation. An indiscriminate disposal of waste and burning was observed all over the municipality especially in market areas, car parks, school's surroundings and other public places. When Respondents were asked about whether uncollected wastes would have negative effects on the environment, 87.3 % indicated uncollected solid wastes have offensive odour while 18.6 % indicated it has no offensive odour. Generally uncollected solid wastes will have offensive odour as also claimed by (Hardoy et al, 2001), if there are biodegradables and liquid in the waste material or when there is possibility of decomposition. In such circumstances, the possibility of an odour is very high. However, the respondents who indicated that uncollected solid waste has no odour might have also based their assertion on the kind of waste they generate in their homes and how they handle their solid waste before private waste companies come for final conveyance.

In contrast, other areas had proper solid waste collection systems where containers were constantly emptied. Solid waste management variations were identified in areas where solid waste containers were emptied constantly. When respondents were asked why despite all efforts made to ensure a cleaner environment, some areas were still in such bad condition; almost all respondents stated that until citizens identified their role in solid waste management and the need to be responsible, the solid waste situation could only be minimally controlled. The types of solid waste that were generated encompassed all categories, including industrial waste such as paper, cardboard, plastics, wood, food wastes, glass, metals, hazardous wastes, scrap materials among others as depicted by (United Nations Environment Programme Division of Technology, 1992) .

Private sector participation in solid waste management in LEKMA

The need for public and private sectors collaboration in recent times has become very important in diverse sectors in ensuring good socio-economic developments (Kia, M., Shayan, E., &

Ghotb, 2000) .Pongsiri, 2002; Nijkamp, 2002, made it clear that in attempts to achieve this partnership, there is the share of responsibilities between the collaborative parties in the quest of achieving a common goal. According to (Widdus, 2001) public-private partnerships (PPPs) have also evolved as a sort of collaboration to pursue common goals, while leveraging joint resources and capitalising on the respective competences and strengths of the public and private partners. Private sector participation in solid waste management at LEKMA includes individual companies collaborating the assembly to provide solid waste management services as well as the involvement of informal waste collectors who also do their work for a fee from households.

Waste management companies identified to be operating in LEKMA included Zoomlion Ghana Limited according to the majority of the Respondents (54.3 %), while 9.9 % indicated they were aware of Darben Cleansing Services Limited. Similarly, 9.9 % indicated only informal waste collectors were operating in LEKMA. Again, there were a lot of private waste collectors who used tricycles, covering almost the entire domestic waste collections in the municipality, and areas where vehicular movement was a challenge.

Relationship between government agencies and waste management companies within LEKMA

The municipal assembly has over the years continued to engage the services of private individual firms to help with the management of solid waste (Fig. 4). Ministry of local government and rural development as well as ministry of sanitation have an oversight responsibility over all metropolitan, municipal, and district assemblies (MMDAs) in Ghana where LEKMA is not an exception. The local governments Act 462 of the 1992 constitution of the Republic of Ghana enjoins the local assemblies to undertake social and other developmental services to the benefit of the people (Assemblies, 1993). It is against this background that LEKMA awards solid waste management contract to private companies to aid their local developmental drive.

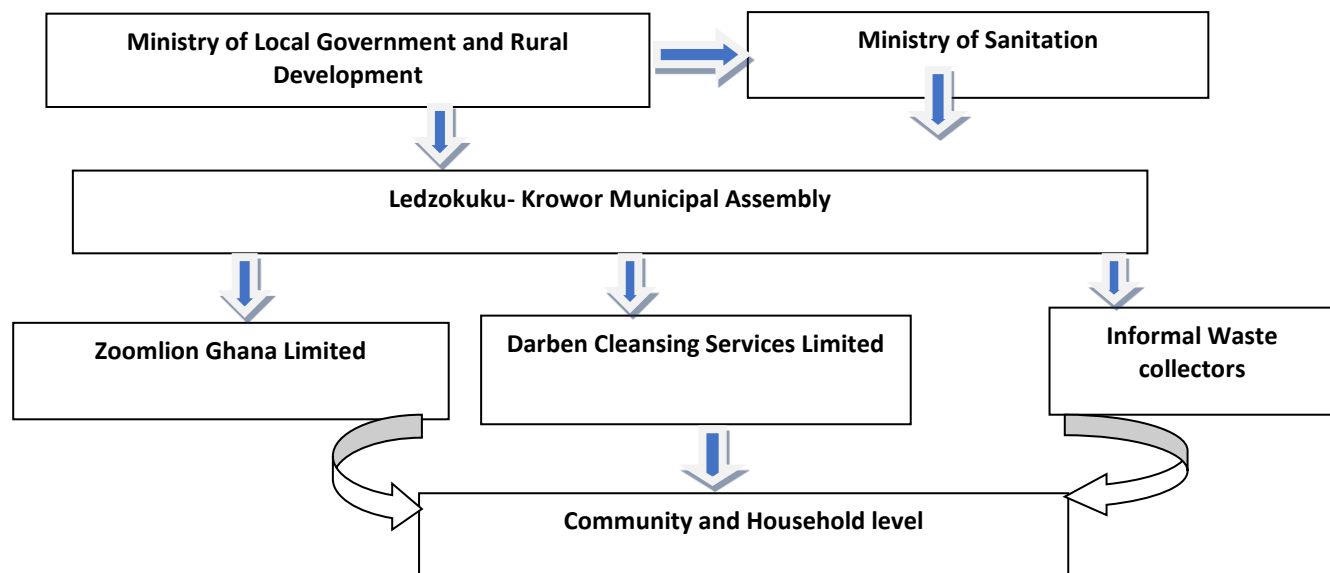


Fig. 4 Relationship among private sector, authorities and households in waste management within LEKMA

The Assembly mostly adopts franchise arrangement to collect waste from the communal points,

which serve various households. Generally, respondents (65 %) were dissatisfied with the kind of services provided by the solid waste collection companies with only 35 % showing satisfaction with their services. Community folks claimed the contribution especially to collection and disposal of solid waste has seen much improvement. This was attributed to the increase in provision of household waste bins to residence (Table 2), which was rather in contrast with studies by (Devas, N., & Korboe, 2000) carried out in Kumasi, Ghana.

A combination of lower cost and less risk for the public sector has been documented as some of the benefits of PPPs (Miller, 2000);(Leitch, S., Motion, 2003). No doubt, some scholars strongly favour such partnerships, terming them the future best practice methods for governmental agencies in order to be cost-effective and efficient (Savas, 2000);(Partnership, 2008)

Table 2. Private sector contribution to safe disposal

Responses	Frequency	Percentage
Provision of waste bins	30	37.5
Education of the community	31	38.75
Others	19	23.75
Total	80	100.0

Source: Fieldwork, 2018

Nonetheless, due to the municipal assembly's limited financial resources, most of the contractors with the exception of Zoomlion Ghana Limited are unable, in most cases, to regularly collect and dispose of solid waste generated in low-income areas and commercial joints. This is in no doubt the truth that, financial and institutional constraints are among the main reasons for inadequate disposal of solid waste, especially where local governments are weak or underfinanced and rapid population growth continues. When local government properly manages the private sector, there is competition, both at the tendering stage and during operations, and such competition produces efficiency. Conversely, if there is no competition and monitoring is poor, a private sector service may be inefficient and expensive.

Challenges of private sector participating in solid waste management in LEKMA

Challenges with the involvement of private sector in solid waste management include lack of capital, poor or delays in payment, inadequate solid waste facilities, and small size of landfill sites among others. According to Onibokun and Kumuyi (1999), capital plays a major role in operations, but most often, the private firms are faced with the problems of inadequate capital in carrying out their tasks. They noted that borrowing of initial capital to operate waste management business is a challenge because it is difficult to access. Therefore, purchasing of equipment such as refuse and tippers trucks is always beyond the reach of most contractors. Due to financial constraints, the private firms are unable to purchase the necessary spare parts, pay staff salary and employ experienced work force.

Some respondents also indicated that some clients do not support the idea of engaging the services of these private firms to dispose of their solid wastes because they believe that solid waste collection should be free since the government collects tax from their wages. They think it should be the responsibility of government to make the environment clean. Fees charged by private firms on solid waste collection seems to be too small and not enough for smooth running

of the business. Debt recovery creates a problem and some clients discontinue the use of the services of the private firms because of accumulated debt they owe. Many residents especially the small-scale business owners and a few others are interested in employing the services of the solid waste collectors but accessibility is a challenge. Interviews with some officials of LEKMA, solid waste officials and opinion leaders revealed that, the major challenge in solid waste management in LEKMA is the syndrome of dumping solid waste indiscriminately with or without waste bins. Public awareness and attitudes to solid waste can affect the population's willingness to cooperate and participate in adequate solid waste management practices. Unawareness of the impact of poor solid waste disposal system is another mounting public setback that promotes solid waste menace in LEKMA. The municipality apart from conducting clean up exercise periodically to clean the excess refuse also creates awareness by educating the residents on how to keep their environment clean. It was established that about 55 % of total revenue of LEKMA taxes and government support funds is spent on sanitation alone annually. This poses a serious challenge for the assembly to undertake other projects of equal importance.

Table 3. Challenges of waste management in LEKMA

Responses	Frequency	Percentage
Accessibility and unwillingness to pay for services provided	6	30.0
Delays in payment of services provided	2	10.0
Frequent breakdown of refuse trucks	6	30.0
Inadequate landfill sites and recycling plants	6	30.0
Total	20	100.0

Source: Fieldwork, 2018

Access to landfills has been one of the major problems of waste management in LEKMA. The Assembly currently transports and disposes off the collected solid waste at Kpone landfill site, which belongs to the Tema Metropolitan Assembly (TMA). At the landfills where solid waste is disposed, there is the need for proper design to convert the site into cells. However, because of the small size nature of dumping sites, designing it into cells is not possible. In addition, inadequate equipment and limited off-loading area are some of the problems confronting LEKMA.

CONCLUSION

The study identified that the solid waste situation in LEKMA was appalling, hence unfit for the Municipality and this was not different from other cities in developing countries. It was evident that some areas were engulfed with quick forming heaps of refuse with flies hovering around; opened drains were swallowed with garbage with foul scent emanating. Private sector participation in solid waste management in LEKMA includes individual companies collaborating with the municipal assembly in the form of public private partnership to provide solid waste management services. These partnerships are sourced through franchise, service contract, open and competitive bidding. Private sector participation in solid waste management

in the study area is challenged by factors including lack of capital, poor or delays in payment, frequent breakdown of refuse trucks, inadequate waste facilities, and small size of landfills sites.

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Disclosure statement

No potential conflict of interest was reported by the authors.

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