

## **INSTITUTIONAL ARRANGEMENTS FOR MANAGING SOLID WASTE IN THE SHAMA-AHANTA-EAST METROPOLIS, GHANA**

Simon Mariwah

Department of Geography and Regional Planning, University of Cape Coast, Cape Coast, Ghana

### **ABSTRACT**

Ghana has almost all the institutions, agencies and policies for waste management at all levels of government. It is, however, a paradox to find that all the major cities in Ghana are still grappling with waste management problems, which threatens the health of residents and for that matter the sustainable development of the nation. This study therefore examines the institutional linkages and responses to the solid waste management problem in the Shama-Ahanta-East Metropolis, Ghana. The study employed a qualitative research approach in the collection and analysis of data. Data for the study were gathered through in-depth interviews from purposively selected officials of the waste management institutions and other stakeholders in the management of solid waste. It was found out that weak institutional capacity, coupled with poor coordination amongst stakeholders, has translated into inadequate solid waste management service delivery in the metropolis. The study recommends a stronger institutional capacity building and coordination between the relevant institutions for effective waste management.

**Keywords:** Solid waste; institutional arrangements; waste management; Ghana

### **INTRODUCTION**

The questions of urban waste management and, by extension, those of urban environmental planning and management represent some of the major challenges facing urban managers (Attahi, 1999). The problem has been linked directly with higher rates of urbanization in most parts of the world, especially Africa. It is said that Africa is the least urbanized continent but one currently experiencing the fastest rate of urbanization (Silitshena, 1996). Undeniably, the rapid rate of urban growth is causing social and economic strains, some of which manifest themselves in environmental problems. These problems occur at varying spatial scales from the home through the neighborhood, the city to the region. The magnitude of the problem is, however, only partially reflected in the higher amount of solid waste generated each year. Although the high rate of urbanization in African countries implies a rapid accumulation of refuse, social and economic changes that most countries have witnessed since the 1960s have also contributed to increases in waste generated per capita (Onibokun, 2004). Consequently, common features of African urban areas are stinking heaps of uncollected waste; waste disposed of haphazardly by roadsides, in open spaces, or in valleys and drains; and waste water overflowing onto public lands.

Indeed waste, in whatever form, is an inevitable by-product of man's socio-economic development process. What needs to

be understood is that the sheer volume of waste does not actually constitute the problem; it is the inability of governments and waste disposal firms to keep up with it (Onibokun, 2004). This view is also shared by Lomborg (2001) as he indicated in his book, *"The Skeptical Environmentalist..."*, that "... we will not be inundated with garbage. Garbage is something we can deal with. It is a management problem" (Lomborg, 2001). Apparently, in developing countries the problem is not as much to do with the quantity of waste, as it is to do with other factors such as poverty, attitude, and governance of the waste.

Ghana has almost all the institutions, agencies and policies for waste management at all levels of government; from the central government down to the very grass-root level of unit committees. Generally, waste management in Ghana is the responsibility of the Ministry of Local Government, Rural Development and Environment, which supervises the decentralized Metropolitan, Municipal and District Assemblies (MMDAs). However, regulatory authority is vested in the Environmental Protection Agency (EPA), which is entrusted with the responsibility for setting environmental quality standards and ensuring their enforcement. The Assemblies are responsible for the collection and final disposal of solid waste through their Waste Management and Environmental Health and Sanitation Departments. According to 1992 Fourth Republican Constitution of Ghana, the Local Government Act 462 of 1993 and the Environmental and Sanitation Policy of 1999, the Assemblies are supposed to enact bye-laws regulating the management of waste in their areas of jurisdiction. Furthermore, the Assemblies are to strengthen their local unit committees through the Assembly Members in order to protect and manage their respective environments.

The Ghana National Environmental Action Plan (1991) published by the Ministry of Local Government and Rural Development (MLGRD) stipulates that District Assemblies (including Metropolitan and Municipal Assemblies) are to implement some specific actions including "enforcing standards and regulations on waste water discharges, emissions, and disposal of solid wastes..." (p. 85). In addition, for the first time in the history of Ghana's public administration system, a separate sector ministry, the Ministry of Environment, was created in 1993 solely for the protection and management of the environment. Realizing the linkages between the environment on one hand and science and technology on the other, the government later merged the Ministry of Environment with that of Science and Technology to improve environmental management.

With all these ministries, departments and agencies charged with the responsibility of environmental sanitation and for that matter waste management, coupled with the available policy frameworks guiding environmental sanitation and waste management, it is a paradox to find that the major cities in Ghana are still grappling with waste management problems. Based on an estimated population of 24 million and an average daily waste generation per capita of 0.45 kg, Ghana generates annually about 3.0 million tons of solid waste. Accra, the capital, and Kumasi, the second largest city, with a combined population of about 4 million and a floating population of about 2.5 million generate over 3,000 tons of solid waste daily. It is, however, estimated that throughout the country only about 10% of solid wastes generated is properly disposed of (Mensah & Larbi, 2005). In Accra, for example, only 11% of the 1.4 million residents benefit from home collection (Songsore, 1992), while the remaining 89% dispose of their waste at community dumps, in open spaces, in water bodies, and in storm draining channels (Asomani-Boateng & Haight, 1999). In the Shama-Ahanta East Metropolitan Area, only an average of 40 percent

of the solid waste generated in the Metropolis was properly collected and disposed of between 2002 and 2006. The limited waste disposal capacity of the urban authority has worsened the cumulative deposition of solid waste in the metropolis; roadside dumps can be found at most parts of the city.

The main objective of the study is to examine institutional linkages and responses to the solid waste management problem in the Shama-Ahanta-East Metropolis with special regard to actors, power relations and coordination between the various actors. Specifically, the study seeks to examine the nature of institutional arrangements for waste management; evaluate the diverse combinations of partnerships between the major stakeholders in managing solid waste; and assess the capacity of the waste management institutions in the Metropolis;

## **LITERATURE REVIEW**

Achieving the MDGs goal seven (ensuring environmental sustainability) requires efforts in all aspects of the environment, with waste management playing a crucial role in this regards. Meanwhile, effective waste management and environmental protection programmes call for a clear definition of roles, jurisdictions, legal responsibilities and rights of the concerned governmental bodies and other organisations. The absence of clear jurisdiction may lead to controversies, ineffectiveness and/or inaction, undermining the political sustainability of municipal solid waste management (MSWM) systems (Schubeler, 1996). According to Onibokun & Kumuyi (1999), a study of urban waste must examine not only the formal structures of government but also the informal structures created by the society, such as community-based institutions, associations, and organisations, their relationships, and the relationship between the formal and informal structures for collection, transportation, and disposal of waste.

The potential for establishing effective institutional arrangements for MSWM depends largely on the existing systems of urban planning and administration. As a basis for performance-oriented management, a comprehensive strategic plan for the sector is required. Such plans should outline the major system components and the projected relationships between various bodies and organisations involved in the system. They should provide guidelines regarding the degree of decentralisation of specific waste management functions and responsibilities, the forms of private enterprise involvement in waste management processes and the role of people's participation (Schubeler, 1996).

Individual countries or municipalities have various institutional arrangements for solid waste management. Even though municipal authorities are mostly responsible for the management of waste, there are other stakeholders who either work in partnership with the Municipal Authorities or through their own initiatives to manage waste at the community level. The combinations range from government-private to government-community and are discussed in the following subheadings.

### **Government versus private sector participation in solid waste management**

There is ample evidence that government agencies can provide solid waste services efficiently. For example, the Shanghai (China) municipal government runs a profitable network of recovery stations and waste utilisation plants (Cointreau, 1987: 43-55). However, private participation can often reduce costs. Private participation through contracting, franchising, competitive bidding, and equipment leasing can sometimes greatly lower costs. Schubeler (1996) is of the opinion that due to

their profit orientation, private enterprises can, under appropriate conditions, provide MSWM services more effectively and at lower costs than the public sector. In Bangkok (Thailand), contracted municipal solid waste management service appears to have lower costs. In Seoul (Korea), Jakarta (Indonesia), and Bogotá (Colombia), private collections command a substantial cost advantage in labour, wages and benefits (Cointreau-Levine, 1991: 15). Evidence from Latin American cities also points to lower costs and higher productivity for the private sector (Bartone, Leitte, Triche & Schertenleib, 1991).

However, private sector involvement does not, in itself, guarantee effectiveness and low costs, especially in serving the urban poor (Coolidge *et al.*, 1998; Schubeler, 1996). Problems arise when privatisation is poorly conceived and regulated and, in particular, when competition between suppliers is lacking. Not only are the poor least able to support waste collection with their own tax base or user fees, they also generate the least valuable garbage and the highest collection cost for private providers. The low-cost solution, therefore, calls for creative service provision and extensive mobilisation of community members to clean up their own neighbourhoods (Coolidge *et al.*, 1998). For example, Brooke (1992) reports that, in the slums of Curitiba (Brazil) which cannot be reached by collection trucks, the municipal authority motivates people to dispose of their garbage by exchanging food (state's agricultural surplus) for bags of garbage.

In Ghana, privatisation of solid waste is increasingly becoming more attractive to local governments. During the 1980s and 1990s privatisation was part of a package of policies designed by the Bretton Woods institutions to structure the economies of African countries. Ghana was one of the first to implement these policies of privatisation. Since then, privatisation has become an unstoppable force in Ghana. In assessing the quality of public and private modes of solid waste collection in Accra, Post and Obirih-Opere (2003) established that "...privatisation has benefited consumers in terms of wider coverage, higher frequency, and more reliable services, but [also accept] that there are also a number of drawbacks, notably worsened labour conditions and increased environmental dangers".

The first experience with privatised collection of household solid waste in Ghana was in Accra. This dates back to 1977 when a West German aid worker initiated donkey-cart collection of refuse in the area of Apenkwa-Tesano-Abeka. The collection by donkeys was discontinued for various reasons, including the closure of the nearby quarry where the donkey carts unloaded (the location of the dumpsite was a major reason for the original success of the experiment) and opposition against this 'rural' type of technology (Post & Obirih-Opere, 2003). Meanwhile the idea of privatisation had gained increasing recognition to an extent that it became part of official policy in 1995 because authorities saw it as an attractive way to reduce the financial burden of public servicing (Post & Obirih-Opere, 2003). Most cities in Ghana went into privatisation of waste management when the Government of Ghana, with the support of the World Bank, implemented the Urban Environmental Sanitation Project 1 (UESP 1) in 1995. Privatisation of waste management activities was an integral part of the programme.

Admittedly, most approaches to the privatisation of solid waste collection and disposal are based on the user fee system which stresses more on ability to pay. When this becomes the case, the poor residents, especially the informal settlements such as slums, are automatically neglected because they are not likely to be attractive to business. For example, Kendie

(1999) in a study on waste disposal in Ghana confirms that faced with limited budgets, the metropolitan authorities handle the rich less badly than the poor. In Hyderabad (India) the state does not recognise slums; hence they are simply disregarded when it comes to waste management (Post & Obiri-Opare, 2003). In Dar es Salam (Tanzania) Kironde (1999) reports that the central area was privatised first because the government believed the charges were more likely to be accepted in those areas.

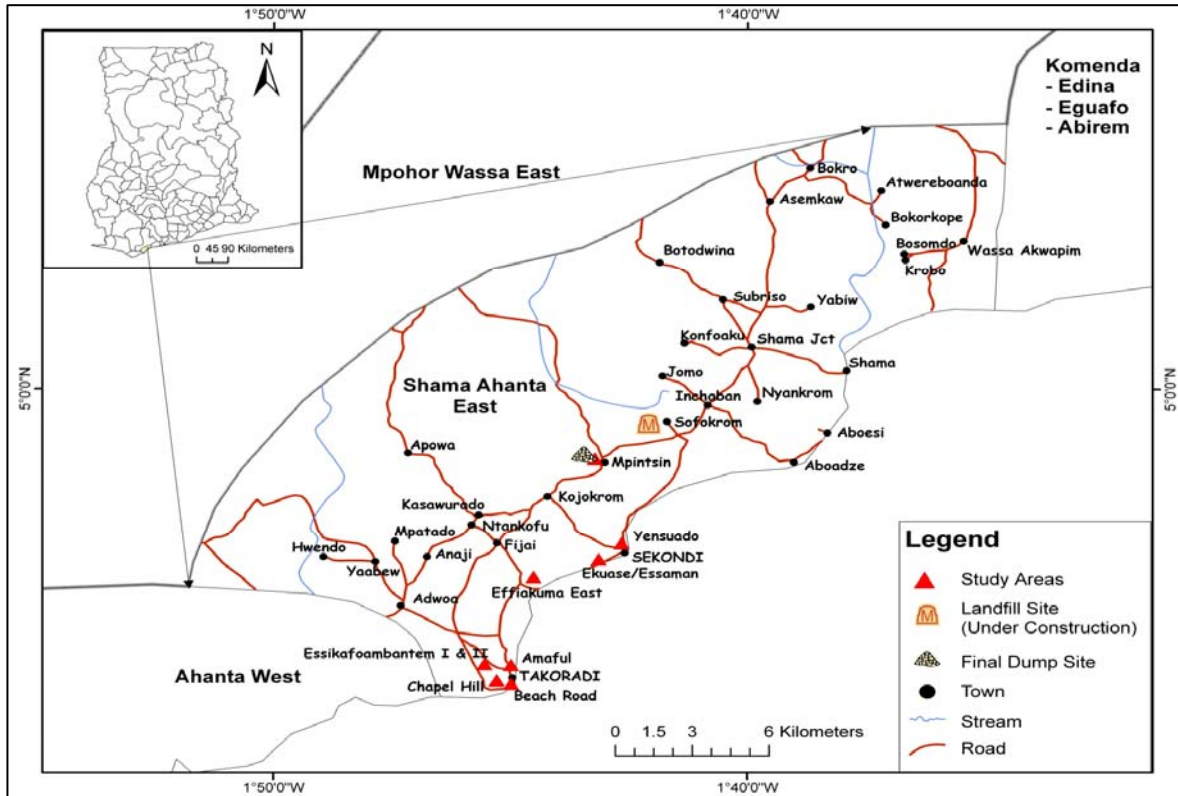
### **Informal sector participation in solid waste management**

Many developing countries have long history of the informal sector participating in the collection and recycling of municipal waste (Coolidge *et al*, 1998). Many people work daily on the streets and in the landfills in search of recyclable refuse. Examples can be cited from the "Smokey Mountain" in Manila (Philippines), in Bangkok (Thailand) and in Cairo (Egypt), where thousands of people informally collect vast amounts of solid wastes (Cointreau- Levine, 1991; Cointreau 1987; Neamatalla, Assaad, Oldham, Souveni & Gohary, 1985). Consequently, low-cost waste collection often requires the integration of the informal sector into the formal waste collection (Coolidge *et al*, 1998). This has been successful in most cities such as in Ciudad Juarez (Mexico), where informal collectors were organised into a recycling cooperative which obtained a concession arrangement to operate the city landfill and also in Medellin (Colombia), where they were organised into "small firms for collecting commercial wastes and for purchasing recyclable materials door-to-door" (Bartone 1991: 507). Thus, the improvement in refuse collection creates the least social dislocation and best utilises scarce skilled labour when it encourages the informal participation of low-opportunity-cost labour.

Even though waste pickers have been involved in collecting recyclables from dumpsites for sale to recycling companies or for their private use over a longer period, their activities have not been documented and for that matter have not been integrated into the entire waste management system in Ghana. Most municipal authorities in Ghana do not recognise their activities due to the unhygienic conditions under which they work at the dump sites.

### **STUDY SETTING**

The study was conducted in the Shama-Ahanta-East Metropolitan Area (SAEMA) in the Western Region of Ghana. Currently, Shama District has been carved out of SAEMA so the Metropolis is presently known as Sekondi-Takoradi Metropolitan Area. SAEMA covers a land area of 385km<sup>2</sup> and is bordered to the West by Ahanta West District, to the North by Mpohor Wassa East District, to the East Komenda-Edina Eguafo-Abrem District and to the South by the Gulf of Guinea (Figure 1). The metropolis is located on the West Coast, about 280km west of Accra and 130km east of the Ivory Coast boundary. It is thus strategically located considering its closeness to the sea and the airports and accessibility to major cities by rail and road and to the Ivory Coast.



**Figure 1: The Study Areas**

Source: Cartography Unit, UCC

## METHODS

The study employed purely qualitative research approach in the collection and analysis of data. Qualitative approach is mainly descriptive and involves the collection and analysis of data that is concerned with meanings, attitudes and beliefs, rather than quantitative method that results in numerical counts from which statistical inferences can be drawn (Ogier, 2002). Data for the study were gathered through in-depth interviews from purposively selected respondents comprising the head and operations officer of Waste Management Department of SAEMA, the head of the Environmental Health Department (EHD) of SAEMA, the head of the Urban Environmental Sanitation Project (UESP), the chairman of the Metropolitan Environmental Sub-committee (MESc) and the scheduling officer (head of operations) of the three private waste management firms in the Metropolis. Others included an official of the Environmental Protection Agency (EPA), the head of the physical planning department and the public health unit of the Ministry of Health. These people were purposively selected for the study because they were assumed to be in the best position to provide the necessary information regarding the governance of solid waste in the Metropolis. Some selected community leaders (Assembly Members) were interviewed to document their informed opinion on the issues under investigation.

All the interviews were conducted by the researcher. First, informed consent was sought to tape-record the session and later transcribed to enrich the qualitative analysis. Validity and reliability of responses were ensured by repeating the responses

provided by the interviewees for them to confirm or modify. This ensured that they understood the issues very well and that their responses were not misrepresented by the interviewer.

The responses were later transcribed and categorized into appropriate themes before analysis was done. In addition to the interviews, some of the relevant policies and documents for environmental sanitation management were reviewed. These include the Local Government Act (Act 462), the National Environmental Action Plan and the Environmental Sanitation Policy, as well as the relevant bye-laws of the metropolis.

## **RESULTS AND DISCUSSION**

The results and discussion of the study has been organised under the following broad subheading for the logical analysis and argument: institutional mandates and responsibilities, environmental legislation and law enforcement in the metropolis, monitoring in the waste management system, and the institutional capacities for managing solid waste in the metropolis.

### **Institutional mandates and responsibilities**

By the creation of the District Assemblies, one of the major tasks given to them was to manage the waste generated within their area of jurisdiction. In exercising the power conferred upon them by Section 79 of the Local Government Act of 1993, the Metropolitan Assemblies are to create Waste Management Departments (WMDs) and to enact by-laws to enable the WMD perform their waste management functions. In addition, the Environmental Sanitation Policy (1999) published by the Ministry of Local Government and Rural Development (MLGRD) states that:

*The District Assemblies [including Metropolitan and Municipal Assemblies] are to be responsible for managing and protecting the environment so as to prevent hazards to human health, conserve natural resources and maintain pleasant surroundings. Districts are to achieve this through public education, provision of environmental sanitation services and the application and enforcement of environmental regulations.*

In accordance with the policy framework, immediate responsibility for solid-waste management (collection, transportation, disposal and/or treatment) in the Shama-Ahanta-East Metropolitan Area lies with the Metropolitan Assembly (SAEMA). It is the Assembly's responsibility to ensure that adequate waste management resources are made available within its area of jurisdiction. To accept and further show its commitments to this course, Section 2, 3 and 4 of the Shama-Ahanta-East Metropolitan Assembly (Solid and Liquid Waste Management) Bye-law (2000) clearly states that:

*All wastes deposited in the public domain shall be the property of the Assembly (Section 2). Hence, the Assembly and/or its registered agents or contractors shall be exclusively responsible for the management of both solid and liquid wastes within the entire administrative area of the Assembly (Section 3). And that every household, industry, office and other premises within the metropolis shall make its solid and liquid wastes available to the Assembly or its authorized agents or contractors for disposal or otherwise (Section 4).*

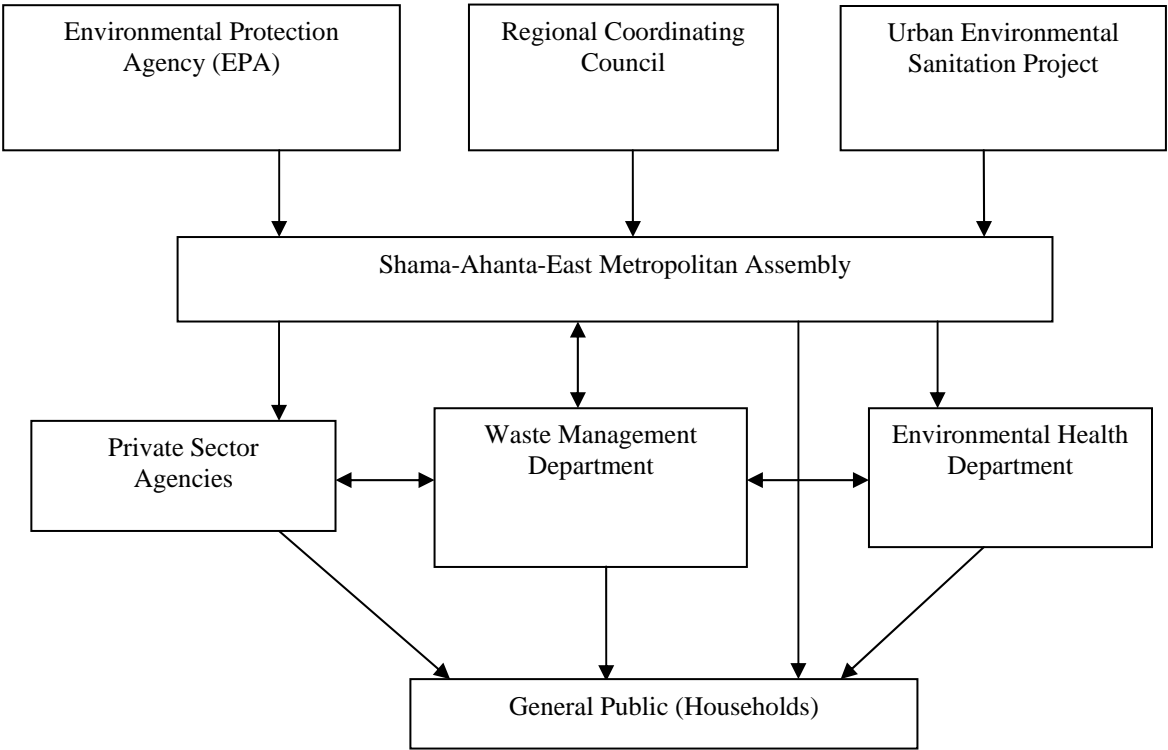
The above provision clearly indicates that waste management resources would either be maintained and operated by the

Assembly itself (through its Waste Management Department and the Environmental Health and Sanitation Department which is responsible for the enforcement of regulations regarding sanitation) or under concession or contract arrangement with private sector organizations. In either case, it is the Assembly’s responsibility to issue licenses to all environmental sanitation service providers, renewable periodically and subject to satisfactory performance.

In order to realize these policies and aspirations there are other institutions and agencies with which SAEMA works. This is in view of the fact that effective solid waste management depends upon an appropriate distribution of functions, responsibilities, authority and revenues between national, provincial and local governments, as well as intra-urban entities such as communities (Schubeler, 1996). Section 6 of the bye-laws on waste management of the Assembly states that:

*All occupiers or owners of premises with the exception of household premises shall designate a member of their staff to be directly responsible in all matters relating to waste management and such designated staff shall liaise with the Assembly or its authorized agents or contractors on all waste approved by the Assembly.*

SAEMA is therefore the pivot around which all the coordination and partnerships needed for effective waste management revolves (see Figure 2): it serves as the policy making body as well as the financier of the waste management services in the metropolis. Thus, all decisions concerning waste management, whether taken directly by SAEMA itself or other agencies, must be approved by SAEMA. The Assembly also fixes all user fees to be charged and collected by the private contractors. The private companies are accountable to the Assembly because it is the Assembly’s responsibility to monitor and evaluate their (private contractors) operations to determine whether their contracts should be renewed the following year or otherwise.



**Figure 3: Existing Coordination between SAEMA and other Stakeholders**

Source: Author’s construct



### **The Waste Management Department (WMD) and the Environmental Health Department (EHD)**

The Waste Management Department (WMD) of SAEMA is one of the departments established by the Metropolitan Assembly to manage environmental sanitation services. Until Sekondi-Takoradi was elevated to a city, waste management in SAEMA was the sole responsibility of the Environmental Health Department. The establishment of Waste Management Department of the Assembly under the Local Government Act of 1993 Act 462 (Section 16) requires an integrated waste management approach with regards to efficient collection and re-use or disposal. To build and strengthen the capacity of the WMD to perform its functions more effectively and efficiently, the Government of Ghana and the International Development Association (IDA) implemented the Urban Environmental Sanitation Project (UESP 1) in 1996 under which SAEMA was required to restructure the WMD and employ staff in adequate numbers and qualifications and experiences satisfactory to the IDA.

The WMD takes both its mandate and resources from the Assembly; therefore, there is a strong linkage between the Department and the Assembly. At present the Waste Management Department handles about 30% of the waste collection services in the metropolis. It is responsible for monitoring the performance of the private waste collection firms in the metropolis. In addition, before a new waste management company is contracted, it is the duty of the WMD to do the initial listing of potential customers or service users within the operational area. It is therefore expected that a strong form of partnership and coordination be encouraged between the WMD and the private sector. From an interview with an official of the WMD, it was revealed that some positive outcomes in the form of increase in the amount of waste collected have been realized since the local private contractors were involved in the management of solid waste in the metropolis.

Known since colonial times as the ‘tankas’ (a corrupted form of Town Council officials) or ‘samansaman’ (meaning the one who summons), the traditional role of the Environmental Health Officer (EHO) has always been that of ‘sanitary inspector’, a quasi-police officer whose job was to enforce bye-laws and statutory health regulations on households, preparers and vendors of food, abattoirs, markets, restaurants and schools, and check that the necessary health certificates were in order (Crook and Ayee, 2006). The EHD generates revenue for the Assembly through the fees from the inspection of the abattoirs and fines from the ‘sanitary offenders’. The inspectors also work directly with the general public through the community and house-to-house inspection of sanitary conditions. The communities and individual households are to make sure that their surroundings are kept clean before the inspectors come around. There is also some coordination between the EHD and the circuit courts and tribunals, who are responsible for the prosecution of ‘sanitary offenders’. This is because when households fail to pay their user charges, the WMD hands the defaulters to the EHOs who have the power to enforce environmental and sanitation laws and regulation in the metropolis.

### **The Private Sector Agencies**

The concept of private sector participation in the delivery of municipal services was introduced to the city of Sekondi-Takoradi in 1996 under the phase one of the World Bank sponsored Urban Environmental Sanitation Project (UESP 1). Under the UESP 1, the metropolis was divided into three zones for the purposes of solid waste management. Initially, only

zone one, covering most of Takoradi, was selected for privatization. After evaluation of the bids, a five-year franchise agreement, renewable yearly was awarded to Aryeetey Brothers Company (ABC) Ltd in August, 2001 for services to begin in November the same year but the franchise could not begin service delivery as scheduled because the equipment for the job did not arrive on time.

Indeed, when it comes to the collection, transportation and disposal of solid waste in the Shama-Ahanta-East Metropolis, one of the most noticeable changes that has occurred since the year 2001 has been a more dominant role being played by the private sector. For instance, addition to ABC Ltd, in 2006, the government of Ghana, through the MLGRDE signed a waste management contract with ZOOMLION Ghana Limited (a private waste management company) to collect and dispose waste in all the districts in the country. ZOOMLION is responsible for container lifting and street sweeping in some parts of Shama-Ahanta-East Metropolis. Also in November, 2006, a new private contractor, RUSABEN Ltd, was signed on to beef up the collection, transportation and disposal of waste in the metropolis.

In order to analyze the effectiveness of alliances between two or more actors, the conditions under which the types of alliances emerge should also be taken into account. Unlike ZOOMLION where the contract was signed by the central government, the contractual agreement of RUSABEN is between the company and the Metropolitan Assembly. The Assembly is responsible for payment and renewal or otherwise of the contract. So in the case of RUSABEN the Assembly has more control over the contractor than in the case of ZOOMLION.

The private waste management companies have strong links with SAEMA because they are contracted (or responsible to) and evaluated by SAEMA. However, there has been a recent complaint by the officials of the WMD about the quality of services rendered by the private companies. Sometimes most of the areas are left unattended to for days. On the other hand, the companies have also constantly registered their displeasure about the non payment by the Assembly which they blame for their poor performance.

### **Environmental Legislation and Law Enforcement in the Metropolis**

The Local Government Act (Act 462) of 1993 as well as the Environmental Sanitation Policy (1999) entreats all District Assemblies to promulgate bye-laws addressing, among other things, designation of areas and facilities for the disposal of wastes, storage of wastes on the premises of waste generators, and adequate provision by developers for the collection, immediate storage, treatment and disposal of solid and liquid wastes. As a result, Section 14 of SAEMA's bye-laws on waste management stipulates that a person commits an offence when he/she does any of these among others things:

- *Fails to provide a standard container for waste storage as prescribed by the Assembly;*
- *Refuses to allow the Assembly or its authorized agents or contractors to collect solid or liquid wastes from one's premises;*
- *Fails or refuses to pay prescribed fees for waste management services;*
- *Indiscriminately dumps, disposes and/or discharges solid or liquid waste in open spaces, drains, gutters, behind walls, burns solid waste in one's compound;*

- *Recycles waste without prior approval of the Assembly.*

Section 15 of the bye-laws goes further to prescribe penalties for any person who contravenes the above bye-laws. It states that:

*Any person who contravenes any of the provisions of these bye-laws commits an offence and shall be liable on summary conviction to a fine of 100 penalty units (GH¢ 200.00: equivalent to US\$150 at the time) or a term of imprisonment not exceeding six months or to both, and in the case of a continuing offence a further fine of one penalty unit (GH¢ 2.00 equivalent to US\$1.50 at the time) shall be imposed after notice in writing of the offence has been served on the offender.*

This is clearly an indication that there are deterrent and efficient sanitation legislations in the bye-laws. The question now is: are these bye-laws enforced properly to achieve their desired objectives? The inability or unwillingness of officials to enforce such laws can contribute to the failure of the system. In confirming the weak enforcement of sanitary laws, an official at the EHD commented;

*Indeed, there is nothing more deterrent than paying GH¢ 200 for just disposing off your waste at an unauthorized place. The problem has always been with enforcement. Even if someone is caught dumping waste illegally, he/she will end up being set free on 'humanitarian' grounds.*

As indicated in the Environmental Sanitation Policy of 1999, the first line of enforcement of environmental legislations and bye-laws in the Shama-Ahanta-East Metropolis is the Health Inspectorate Division of the Environmental Health and Management Department, which works by:

*Non-coercive action through a combination of education and persuasion. The objective is to make the communities understand and accept their responsibilities with regard to environmental sanitation. However, where such non-coercive actions fail in enforcing the sanitation regulations, legal action may be taken through the courts of law, especially the community tribunals. If necessary, the police may be requested to arrest offenders so that they can be brought to justice (MLGRD, 1999).*

Consequently, the Environmental Health Department, through the Shama-Ahanta-East Metropolitan Assembly, has established a close link with the Takoradi and Sekondi circuit courts to deal with such environmental offences.

In the metropolis, issues of bribery and corruption have been recorded to have hindered effective solid waste management through ineffective enforcement of sanitation bye-laws. The notion that, even if guilty of environmental offences, one could always escape punishment by offering bribes has always prevented people from taking environmental issues seriously (Agunwamba, 1998). A good example is the case where an opinion leader commented: "instead of educating us on solid waste management issues they (environmental health officers) take money from us on minor offences".

The Environmental Health Officers, on the other hand, registered their displeasure about the extent to which the so-called

'big men' interfere with their duties by pleading on behalf of sanitary offenders, especially if the case is sent to court. These things tend to encourage people to commit 'environmental offences' as there will always be someone to plead for them. It also makes it difficult to summon another person when his/her neighbor has been set free on similar offences. When an officer finds himself in such situations, he becomes demoralized and that affects further action. Finally, the EHOs were not satisfied with the rate at which the courts deal with environmental offences: they complained of delays and adjournments in executing what they call 'environmental justice', which in turn defeats the objective of their job.

### **Monitoring in the Waste Management System**

Effective monitoring is very critical to ensuring good governance in the management of solid waste, especially as some kind of power is given to the private sector. The contractual agreement between the Assembly and the private waste management companies makes provisions for sanctions that are to be applied against the companies in case they do not perform satisfactorily. For example, Annex 8 (3) of the solid waste privatization contract between SAEMA and RUSABEN limited states that:

*The FRANCHISEE shall further pay to Assembly damages the sum of ₵100, 000.00 [GH₵ 10.00] for each premise which, after investigation by the Assembly, has been determined by it to have been missed on any collection day, or within 24 hours of an appointed collection date.*

Annex 8 (6) further states that:

*Observations of spillage and windblown litter from improperly covered or contained vehicles and equipment operated by the FRANCHISEE shall be subjected to a penalty to the FRANCHISEE at the rate of ₵400,000.00 [GH₵ 40.00] of offence.*

Invariably, the application of these sanctions will depend on effective monitoring of the activities to determine when things are not done properly. For instance, without adequate monitoring mechanisms in place, one cannot determine a premise that was not covered in the collection process, or a spillage that results from uncovered waste collection vehicles. As human as those institutions are, the private companies are more likely to take undue advantage of their customers and the management system when they realize that there is no effective mechanism in place to monitor them. It was found that the Assembly lacks the capacity to ensure effective monitoring of the activities of the companies, as an official of the WMD rightly put it:

*We do not have enough logistics, especially motorbikes and pick-ups to visit all the container sites and monitor the activities of the companies. In most cases there is no fuel to embark on such a trip. If we really want to ensure effective monitoring as specified in the contract, then much investment needs to be made in that respect.*

This is consistent with Vietnam's Capacity 21 Project's report which identified that authorities responsible for supervision and monitoring of urban waste management systems are seen as weak in terms of funding and logistics to ensure efficient monitoring and supervision (Socialist Republic of Vietnam, 1997a). And since good governance requires participation of all stakeholders at every stage of waste management, UNEP (2005) suggests that, in instances of weak institutional capacity to

monitor the activities of private companies, community groups may establish an environmental committee that is responsible for solid waste management; and their responsibilities may include monitoring solid waste management activities that are performed by the municipality or their contractors.

### **Institutional Capacities for Managing Solid Waste in the Metropolis**

This section of the paper assesses the personnel and logistical capacities of the various actors that are directly involved in the solid waste management process in the Shama-Ahanta-East Metropolitan Area. It also examines how the capacities of the actors have influenced the existing mechanism for the collection and disposal of solid waste in the metropolis. This was done through the evaluation of the existing mechanisms for solid waste collection and disposal bearing in mind that inadequate collection and disposal are symptoms of weak capacities of and/or poor coordination between the institutions.

### **Capacity of the Waste Management Department**

Closely linked to the institutional framework are those with administration and management. The study found that there exist large discrepancies between the staff requirement and the actual strength of staff at the managerial and operational levels. Even though some personnel at the Waste Management Department of SAEMA have the requisite knowledge and qualification, the number does not come close to the one specified by the Environmental Sanitation Policy for a metropolitan authorities. About 199 personnel were on the ground as at the time of the research, but about 466 are required for effective performance (Table 1). Consequently, the workers frequently, complain of working over and above their normal working hours without adequate compensation.

**Table 1: Human resource capacity of the Waste Management Department**

<b>Personnel</b>	<b>No Available</b>	<b>No Required</b>
Operations manager	1	2
Support services Manager	1	2
Pant and Equipment Manager	1	1
Finance and administration manager	1	1
Sanitary Officers	10	25
Sanitary Engineers	3	5
Laborers	33	100
Sweepers	112	250
Drivers	10	20
Mechanical engineers	1	2
Mechanics	25	40
<b>Total</b>	<b>199</b>	<b>466</b>

Fieldwork, 2007

One of the major reasons for the inadequate personnel has been the deficiency of funds. But even at the best of times, the service has been unable to attract the right caliber of people (particularly at the technical level). This is partly due to the fact that people generally hold the administration at the local-government level in low esteem. Because it is the level of government closest to the people, they tend to hold it responsible for the failure of government in general. This situation is exacerbated by poor conditions of service. Onibokun & Kumuyi (1999) assert that historically, local-government staff have been less well paid than their regional and national counterparts, and even among the local-government staff, the waste-management section attracts the least pay. This and other conditions tend to considerably lower morale and promote indolence among the staff. However, the low level of human resource capacity of the Metropolitan Authority has been found to be prevalent in all major cities in Ghana (Tsiboe & Marbell, 2004; Gough, 1999; Kendie, 1999) as well as in the major cities of all developing countries (Bernstein, 2004; Onibokun & Kumuyi, 1999; Satterthwaite, 1998).

There also exists a big gap between the amount of work to be done by the WMD and its logistical capacities. This is because environmental sanitation services (especially collection and disposal of solid waste) rely mostly on certain items of specialised plants and equipment. Many of these are expensive as well as having to be imported, thus making their procurement and maintenance a major operational issue. Table 2 shows the status of available machinery in the WMD.

Moreover, the capability of a solid waste management system to consistently and reliably achieve its goal depends largely on the operation and maintenance. According to Agunwamba (1998), no matter how efficient a solid waste management system is theoretically known to be, it will fail to achieve the required efficiency if there is no effective operation and maintenance in place.

The poor maintenance culture has led to the breakdown (grounding) of most of the important vehicles as indicated in Table 2. This confirms Quarshie's (1994) assertion that it is common for 60% of the collection vehicles belonging to the WMDs to break down at any one time waiting for repairs. This is mainly due to the fact that the refuse collection trucks of WMD are serviced and repaired at the Assembly's workshop, which also services vehicles from all other Departments of the Assembly. According to an official at the Waste Management Department:

*Much time is spent repairing faulty vehicles due to workshop delays and lack of equipment and spare parts". To him, the major obstacles relate to the bureaucratic bottlenecks associated with the release of money for spare parts; sometimes it takes months for the Assembly to release money to repair an important waste collection truck.*

**Table 2: Status of Existing Equipment**

Serial No.	Vehicle	Age	Status
Door-to-Door Vehicles			
1	BMC Tipper Truck	6	Poor
2	Volvo Tipper Truck	9	Grounded
3	Volvo Tipper Truck	2	Grounded
4	Tractor	2	Good
5	Tractor	2	Grounded
6	Tractor	2	Good
7	Tractor	2	Good
Container Lifting Vehicles			
8	Benz Roll on/off	3	Good
9	BMC Roll on/off	10	Grounded
10	Skip Loader	2	Good
11	Back Hoe	5	Poor
12	Pay Loader	-	Grounded
13	Bulldozer	10	Grounded
14	TANA Compactor	5	Grounded
Other Vehicles			
15	Toyota Pick up	6	Grounded
16	Mitsubishi Pick up	-	Grounded
17	Benz Bus	-	Grounded
18	Mitsubishi Pick up	10	Grounded
Motor Bikes			
19	Motor Bikes	10	Poor
20	Motor Bikes	2	Good

Source: SAEMA, 2006

Consequently, out of the 20 different kinds of vehicles used in the management of solid waste in the metropolis, 11 of them are grounded and non-operational at the time of data collection (see Table 2).

### **Capacities of the Private Waste Management Companies**

Realizing the weak capacity of the WMD to effectively manage waste in the metropolis, the Assembly contracted private companies to support the waste management service delivery. In relation to capacity, it was strikingly interesting to learn that what actually took place under the waste privatization process was a mere transfer of the public burden into the private hands. Like the Waste Management Department of the Assembly, the private waste management companies in the Shama-Ahanta-East Metropolis have very weak capacities to handle the amount of waste generated in the city. These private

companies (with the exception of ZOOMLION) indicated inadequate qualified personnel as a challenge to ensuring effective operation (Table 3). Comparing the human resource capacities of the private companies with that of the Waste Management Department, it could be realized that the WMD is far better off.

In terms of logistics, the two private companies lack most of the important waste collection machinery needed for the work (Table 4). For instance, none of the companies has any of the following; health vans, fork lift truck, skip loader, tractor and pick-up. Whilst ABC has only one container trucks and requires 4 to work with, RUSABEN has 4 of them. For compactor trucks, ABC has two (2) out of the six (6) required to ensure full capacity utilization. RUSABEN and ZOOMLION seem to be logistically better off than ABC because they were contracted in 2006 while ABC has been working in the metropolis since 2001. As a result, most of its equipment and vehicles are older and has reduced the capacity of the company to handle waste collection.

The weak logistical capacities of the waste collection institutions could, in part, explain why the metropolitan authorities are not able to effectively manage solid waste in the metropolis. According to Babu *et al* (1996), efforts to design and implement sound environmental policy can generally be impeded by a lack of adequate capacity. In addition to the weak capacities, the private companies suffer from inadequate finances as the Assembly does not pay them on time. Separate interviews with officials of both ABC and RUSABEN revealed that the Assembly still owes them a substantial amount of money. This assertion was confirmed by an official of the Assembly who however, indicated that plans are far advanced in seeing to the payment of all the arrears.

**Table 3: Staff Strength of the Private Companies**

Personnel	Company	No Available	No Required
Sanitary officers	ABC	13	19
	RUSABEN	-	-
	ZOOMLION	4	-
Sanitary Engineer	ABC	2	8
	RUSABEN	-	-
	ZOOMLION	1	-
Laborers	ABC	10	21
	RUSABEN	12	-
	ZOOMLION	9	-
Drivers	ABC	4	4
	RUSABEN	7	-
	ZOOMLION	11	-
Sweepers	ABC	-	-
	RUSABEN	-	-
	ZOOMLION	240	-

Source: Field work, 2007



The contractors therefore expressed their dissatisfaction with the mode of payment and suggested that the Assembly should pay them on a monthly basis. According one of the officials:

*Even though in times of non-payment they have to rely on loans from the banks to sustain their operations, the inadequate funds tend to cripple their efforts to rid the city of the filth.*

Officials of ZOOMLION on the other hand, did not complain of inadequate finances as all their financial needs are provided from the national office of the company. The national office supplies spare parts, provides maintenance of vehicles, and supplies even fuel coupons for their operations.

**Table 4: Logistical Capacities of the Private Companies**

Facility	Institution	No available	No in working condition	No required
Container trucks	ABC	1	1	4
	RUSABEN	4	4	-
	ZOOMLION	4	4	-
Compactor trucks	ABC	2	2	6
	RUSABEN	2	1	-
	ZOOMLION	2	2	-
Skip loaders	ABC	-	-	-
	RUSABEN	-	-	-
	ZOOMLION	2	2	-
Pick ups	ABC	-	-	-
	RUSABEN	-	-	-
	ZOOMLION	1	1	-
Central containers	ABC	-	-	-
	RUSABEN	5	5	20
	ZOOMLION	40	40	-
Plastic/metal receptacles	ABC	-	-	-
	RUSABEN	18	18	50
	ZOOMLION	250	250	-

Source: Field work, 2007

One of the major challenges in collecting solid waste in the metropolis is inaccessible nature of some of the houses as well as poor access roads, especially during the rainy season. All the three private companies indicated that they experience a lot of vehicle break down during the rainy season due to poor road network in the low-income areas. An official of ZOOMLION remarked:

*We encounter most of our collection difficulties in the rainy season due to poor road network in the low*

*income areas. In addition, during the rainy season, the final disposal site becomes virtually inaccessible and the refuse trucks find it difficult to dispose of the waste, leading to an increase in spill over at the disposal site.*

The findings are in consonance with other studies which seem to agree that environmental capacity building initiatives have not only stressed the importance of organizational and institutional strengths, but also the abilities of agents, the role of human capital, technical expertise and functional skills needed to carry out environmental protection measures (OECD, 1995; Janicke, 2002). Thus, the entire process of solid waste management (storage, collection, transportation, treatment and/or disposal) is a complex task that requires adequate capacities (both personnel and logistics) from all the actors involved in order to ensure effective and efficient execution.

### **CONCLUSIONS AND RECOMMENDATIONS**

The study found out that a combination of factors has contributed to the current unsustainable and appalling waste management situation in the Shama-Ahanta-East Metropolis, thereby threatening achievement of the environmental sustainability goal in the Millennium Development Goal Seven. Subsequently, the following conclusions were drawn. In the first place, there is weak institutional capacities (inadequate personnel and logistics) and over-reliance on sophisticated imported equipment. The responsibility over solid waste collection and disposal is well beyond the capacity of waste management institutions; there exist large discrepancies between the staff requirement and the actual strength of staff at the managerial and operational levels. Through the involvement of two more private companies in the management of solid waste in the metropolis, environmental management capacity has been strengthened, but this is still deemed inadequate to meet required levels of urban solid waste collection. For example, they face difficulties in carrying out their waste management functions due to inadequate financial, technical and human resource capacity. Secondly, the collection companies relied so much on the sophisticated imported equipment which were expensive and difficult to maintain. According to Schubeler (1996), a sustainable solution to a solid waste problem will not necessarily represent the highest standards of service and environmental protection, but those which can be afforded.

Furthermore, there is a lack of strict monitoring and enforcement of sanitation bye-laws in the Metropolis. The study found out that there are deterrent environmental sanitation by-laws but lack of strict enforcement has contributed immensely to the indiscriminate dumping in the Metropolis. It is common knowledge that human beings need to be monitored and sometimes punished, when necessary, before they respond positively to changes. As the issue of proper waste disposal has not been part of us from the scratch, proper education and strict enforcement should always be done.

It is obvious that a healthy environment and a technically, economically and socially sustainable waste management cannot be provided solely by a single government department, a single NGO or a single private company. Increasingly, these actors have to work in partnership to ensure effective solid waste management in the Shama-Ahanta-East Metropolitan Area. Therefore, to ensure sustainable waste management and hence, sustainable development in the Metropolis, the Assembly should incorporate the informal waste collectors (waste pickers) into the entire waste management system by encouraging

the establishment of recycling firms in the Metropolis. This will also encourage households to segregate waste since they would then have economic incentive to do so.

The coordination for waste management should be encouraged within the context of environmental education and stricter enforcement of sanitary bye-laws. Environmental education creates environmental awareness and makes people conscious of environmental issues. The enforcement of bye-laws is important in view of the fact that environmental awareness is not sufficient enough to ensure change in behavior. Therefore, stricter law enforcement is needed to deter people from dumping indiscriminately.

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## **ABOUT THE AUTHOR**

**Simon Mariwah** is a Lecturer in the Department of Geography and Regional Planning at University of Cape Coast, Cape Coast, Ghana.