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Solid Waste Management in Accra

As stated in Chapter 4, integrated solid waste management practices entail a coherent system for waste generation, gathering, storage, collection, transportation, recycling, energy recovery, treatment and disposal. Waste includes domestic refuse, commercial and institutional waste, street sweepings and construction debris. This chapter investigates the so-called institutional arrangements in the collection of household solid waste and their contribution to urban environmental management. Solid waste collection is organised in various ways, each having its own strengths and weaknesses. Policies on solid waste collection should spell out clearly (and in no ambiguous terms) the roles and responsibilities of the stakeholders in waste and sanitation management, including the local authority, the private sector and the communities. It is precisely in this vein that this study carried out a survey to generate empirical data on the stakeholders' involvement in and perceptions of waste collection in Accra.

In this chapter we examine the qualitative and quantitative aspects of solid waste collection practices in Accra: its major problems and the suitability of the institutional arrangements for addressing these problems. We first address the geographical dimension of solid waste collection problems, making it clear why there are spatial differences in the urban waste collection problem. After dealing briefly with the dilemma of lack of data and the need for sound planning, we will deal with the different components of the solid waste cycle in Accra. Next, we lay particular emphasis on the significance of the reform policies of decentralisation and privatisation for the solid waste collection activities under public and private arrangements and on the causes and consequences of the recent changes and developments in the solid waste collection. In the last part of this chapter we focus on the actors taking part in Accra's solid waste collection, waste recycling and composting, on how they organise their activities and on what is the relative and absolute importance of these activities. The discussion draws from literature and empirical data (secondary and primary) obtained from the Accra survey carried out from 1999 to 2000⁵⁶.

⁵⁶ For further details of the methodology and data used, including the template applied in the analysis of sustainability, see Obirih-Opareh N. (2000), Institutional arrangements and stakeholders perspectives for solid waste collection in Accra. A Report presented to the Netherlands Israel Development Research Programme (NIRP).

6.1 Dimensions of the solid waste collection problem

There is a clear relation between the waste management practices and the cleanliness in the various residential areas of Accra. Though a greater part of the city is fairly clean, particularly the rich and some middle-income areas, some parts of the poor-income areas and market places are filthy, littered with plastics bags and gutters often blocked by all manner of waste due to poor waste practices. In general, solid waste collection in Accra has bedevilled not only the city authorities, but also service consumers and providers alike. The problems in this particular domain of solid waste management are overwhelming and deserve swift action. But how did this grave situation occur? And why has the household solid waste collection problem surfaced with such an intensity and diversity? Many factors act in concert to reinforce and perpetuate the problems.

Firstly, the volume of waste generation is huge compared to the available capacity for its collection. Given that the per capita solid waste generation in Accra is 0.51 kg/day⁵⁷ (AMA, 1992; Ghana Vision 2020, 1996) then in 2000, when the population was over 1.65 million people (GSS, 2000), with the unofficial figure being about 3 million inhabitants (AMA, 1999), Accra produced between 841.5 and 1,530 tonnes of solid waste daily respectively⁵⁸ (see Section 6.1.1 about the dilemma of estimated daily solid waste generation in Accra for planning). Moreover, the total maximum solid waste collection capacity (by both the public and private sectors) is only 60% of the volume waste generated⁵⁹ (WRI, 2000: 278; AMA, 1992). According to the AMA, as at 2000 the remaining 40% is collected either irregularly or not at all. Although these figures are, at most, crude estimates, it is very obvious that collection performance, at least until recently, is far from adequate. This results in periodic formation of mountains of uncollected garbage particularly in the poor and middle-income areas. These heaps are potential sources of epidemics and other communicable diseases to residents. As the Ghana Vision 2020 document⁶⁰ (1996) noted, tonnes of domestic refuse spills into open fields, streams, creeks or sewage systems in the metropolitan area each day. Large quanti-

⁵⁷ There has not been any comprehensive empirical study on the per capita waste generation in Accra. Therefore all such per capita waste generation figures are estimates.

⁵⁸ The wide discrepancy and disparity between the official and unofficial population figures and their effect on waste generation is itself an obstacle for proper planning (including logistics) for waste management.

⁵⁹ During the inauguration of the City and Country Waste Limited into the waste collection system on 7 July 1997, the then Minister for Local Government said the involvement of CCW in waste collection would increase the total collection capacity of both public and private contractors from 700 to 1,200 tonnes a day (Ghana Daily Graphic (7 July 1999).

⁶⁰ Vision 2020 is the policy document of the government of Ghana (under the Rawlings administration) on its vision for Ghana's development from 1996 to 2020.

ties of household organic matter generated in Accra flow straight into the river basins and water bodies creating serious public health problems (Ghana Vision 2020; 1996). According to the Ministry of Health of Ghana, the causes of most illness in these areas are attributed to poor sanitation and inadequate environmental awareness. If sanitation could be improved, sanitary-related illness would be reduced significantly. Ghana's health statistics show that many of the illness could be prevented through proper sanitation.

Secondly, a major factor affecting efficient and effective solid waste collection in the metropolis is the attitude of residents towards waste in general. This factor is discussed in more detail in the next chapter.

Thirdly, most houses in the deprived areas are inaccessible by road. This means that it is difficult to remove garbage from those areas, at least by way of the standard motorised vehicles. Usually, the inaccessible areas are serviced by the central communal container (collective container collection) system, but considering the effort people have to put into bringing their garbage to the reception points and the substantial average distance to the container sites, many people are inclined to opt out from the official system. Although people would like to have more facilities, they simultaneously object to the containers being located near their houses. Existing sites are neither properly cleaned nor maintained and containers are often collected untimely, thus resulting in spillage, horrifying stench and flies.

Fourthly, enforcement procedures for offenders of byelaws for waste and sanitation are weak.

Fifthly, the waste management sector faces an acute financial shortage due to inadequate funding and poor cost-recovery capabilities. Lack of transparency and accountability in revenue collection and disbursal⁶¹ affect the success of the operation. The collective container collection-system, which is about 70% of total waste collection in the metropolis, is free of charge to consumers, putting a severe financial burden on the local authority.

The absence of efficient land-use and building permit policies and the fact that they cannot be effectively enforced and implemented is a sixth factor which hinders ef-

⁶¹ Investigation by the AMA to find out why the pay-as-you-dump (PAYD) method failed revealed that some revenue collectors at the collective container collection dumping sites charged more than the approved rates and kept the difference without the knowledge of the AMA, whilst some of the residents also refused to pay the fee. This limits the capacity of the AMA to provide quality services on a sustained basis, let alone to increase coverage.

efficient waste collection in the metropolis. The lack of an effective land-use policy and ineffective enforcement of building permits ensure continuous haphazard housing development, thereby reinforcing and perpetuating the waste collection problems. A lack of decent housing, congestion of and overcrowding also generate filth.

The seventh factor refers to the high rate of population growth of and migration to the city which puts severe pressure on existing infrastructure for waste collection. The rapid population growth rate in Accra is estimated to be in excess of 4.1 % per annum, which is several times higher than the national average of 2.3% (GSS, 2000) is responsible for at least an equivalent increase in volume of waste generation. In addition to the population growth, the nature of the waste itself is also changing because of development-related changes in consumption patterns (Doan, 1997: 28). For instance, consumers in Accra have begun to make extensive use of both polythene bags and other plastic packaging, which create a whole new category of waste and its associated disposal problem.

The eighth factor refers to the low regard for waste collection workers and high labour turnover. Labourers engaged in waste collection services are not interested in the work, which they consider filthy and a 'temporary' means of survival whilst they search for a 'better job' elsewhere. As a result, besides the fact that workers do not do their best in this sector, the industry has to contend with a rapid turnover of staff. This severely affects efficient delivery of service in waste collection.

Finally, there is the problem of the shortcomings of the waste collection vehicles. The type of equipment used for waste collection can have a significant effect on the effectiveness and efficiency of solid waste collection. The types of equipment used by some waste service providers also create other environmental problems such as littering from open trucks, which do not use nets as required by the AMA byelaw, to cover the waste during transit to the disposal sites.

6.1.1 The dilemma of estimated daily solid waste generation in Accra for planning

A major problem facing the city authorities in their planning is the dilemma of estimated daily waste generation. During the inauguration in July 1999 of the City and Country Waste Ltd (CCW) into the waste management scene in Accra, the then Minister for Local Government, Mr Kwamena Ahwoi said the presence of CCW would help increase the volume of waste collection from the current 700 tonnes to 1,200 tonnes, constituting 80% of the waste generated in the city. Assuming these are the real official figures, then the total waste generation in Accra is about 15,000 tonnes (*i.e.* $100/80 \times 1,200$ tonnes = 1,500 tonnes). This is the clearest

indication yet of the quantity of solid waste generation per day in Accra given by the Ministry of Local Government, the Accra Metropolitan Assembly (AMA) and the Waste Management Department (WMD) as at July 1999. But how did the authorities arrive at this figure of 1,500 tonnes of waste generation per day for Accra? It seems the authorities based their calculations on a population of 3 million and the WMD's estimate, made in 1992, of the waste generated per capita waste of 0.51 kg for Accra. This would produce the sum $3,000,000 \times 0.51 \text{ kg} = 1530 \text{ tonnes}$. In December 2000, the CCW claims it was collecting 1,150 tonnes of waste a day in Accra. This is almost the 80% the Minister of Local Government promised during the inauguration of CCW that the involvement of the new company would lead to. Assuming this claim was verified by the local authority as correct, then the total waste generation is in the region of between 1,200 tonnes and 1,500 tonnes a day, considering the fact that CCW and its accredited private local contractors were unable to collect all the waste from all parts of the city.

However, the Ghana Statistical Service (GSS), in its 2000 national population census, put the population of Accra at 1.65 million. This is almost about half of the population figure used by the Minister of Local Government, the AMA and WMD in 1999. The World Resources Institute also put the per capita waste collection in Accra at 0.41 kg (WRI, 2000: 278. This figure, however, seems a little bit low for a city in tropical Africa. The WMD (1992) per capita waste generation figure of 0.51kg seems more credible. The WRI (2000: 278) figure of 0.41 kg per capita gives 676.5 tonnes and 1,230 tonnes for a population of 1.65 million and 3 million respectively, whilst the WMD's figure of 0.51 kg per capita gives 841.5 tonnes and 1,530 tonnes for a population of 1.65 million and 3 million respectively. The disparities between these figures (*i.e.* 676.5 tonnes, 841.5 tonnes, 1,230 tonnes and 1,530 tonnes) for one city in a single year are just too great for any meaningful comparisons and planning. For example, the second, third, and fourth figures for volumes of waste generation per day are 24%, 82%, and 126%, respectively, more than the first one. It is confusing which one to use for analysis and planning. Similar frustrations forced Dr Kwesi Nduom, the new Minister of Economic Planning and Regional Co-operation, to warn directors and staff of the Ghana Statistical Service (GSS) that the government would not tolerate any laxity on their part. He noted that the reason why Vision 2020, the previous government's blueprint for socio-economic development, had become a dormant development agenda was because the GSS and its collaborators failed to provide the necessary good quality and timely statistics to ensure its effective implementation, monitoring and evaluation. "Unfortunately that which allowed that condition to exist is still present. My ministry will not tolerate such laxity from the GSS", he said. Dr Nduom further lamented: "...There was no network that could be used to share information. There

was no database containing information on critical indicators of performance at the national or local level.” Dr Nduom said this situation leaves much to be desired. He noted that good quality, adequate, relevant, reliable and timely statistical data are important to national development planning, saying, “... good statistical data is the link between good planning and good results” (Ghana Daily Graphic, 19 November 2001). This reinforces the frustrations people have over statistical data and over population figures released by the GSS.

6.2 The solid waste cycle

The conceptual framework underlying the ‘solid waste cycle’ presupposes a sort of circle in which waste in one way or the other flows, *i.e.* a sort of circular flow through recycling or regeneration of the waste as a resource. Waste is used as a raw material to produce other products through reuse, recycling and composting, through which waste might be used again and perhaps again in a continuous fashion. This process creates a circular chain reaction, with identifiable stages and actors. This circular flow is not a very accurate description of the situation at least in Ghana, where just a very small part of the waste re-enters the circle resources for reuse, recycling and composting. Though the percentage of waste that is regenerated, re-used, recycled or composted is unknown or not properly documented, it is noticeable that a greater part is disposed of either through open burning at disposal sites. Some writers prefer to call the term “waste stream” instead of waste circle. Others refer to it as the “waste hierarchy”. In this study, we prefer to look at who does what in solid waste management, *i.e.* at who are the actors involved from primary collection and storage to final disposal. The next sections provide brief discussions on these identifiable steps in the circle and the main activities and actors involved.

There are quite a number of activities in solid waste management besides the collection and transportation to disposal sites. For instance, the reuse and recycling industry is a source of employment for many people. People go round earning a living by collecting iron and aluminium scraps, used bottles and other glasses from dumpsites and homes. There is no clear-cut government policy on recycling or composting waste, at least perhaps not until recently. Most of the activities in the recycling sector emerge spontaneously and are performed by the informal sector. One would have expected that the government would provide some sort of help to this sector. Most of the indigenous small-scale industries, particularly in the aluminium sector, need small grants and loans to improve their industries. In the following sections we will discuss the various economic and income-generating activities in solid waste management, paying attention to:

- Collection and transportation

- Recyclable items/materials such as crushing glasses and manufacturing other products from them and composting.
- Reuse of materials (*e.g.* glasses and bottles that can be cleaned and reused).
- Waste disposal of non-recyclable items/materials.

Plate 6.1 Young girls participation in solid waste collection



Plate 6.1. These kids are returning from a waste dumpsite after discharging their waste. They normally carry the waste on their head in all manner of primary storage facilities as depicted in this picture. This is a common sight in many poor- and some middle-income areas where young girls play active role in solid waste management.

6.2.1 Collection and transportation

Collection can be divided into two parts – primary and secondary collection. Primary collection involves the sweeping of waste by individual residents or households and its brief storage in their homes or other premises. In most traditional Ghanaian households, and particularly in poor and middle-income households, women carry out the daily morning sweeping of the house, the compound and its immediate surroundings, whilst the young boys normally sweep the living rooms.

The young girls carry the waste gathered to the containers sites in the case of a collective container collection-system (see Plate 6.1).

In fact in Ghana, this is the routine work every morning for a woman in any traditional poor and middle-income household. In these households, children are not only exposed to the waste that might leak from broken baskets and wooden boxes in the process of carrying them to container sites and get contaminated with the filth at the dumpsite, they also litter the road. This contrasts sharply with the situation in a rich-income household, where houseboys and maidservants exclusively handle the household waste, making it available to waste collectors in a container in front of the house. Moreover, only grown-ups, not children, handle waste management in the rich-income households. The secondary collection involves sending the waste into containers for carriage by waste service providers who transport the waste to disposal sites. In towns and urban centres, only institutions, organisations, service providers and approved agents of the local authority can send waste to disposal sites. Normally this involves the use of means of transport such as vehicles (trucks, power-tiller, etc.), wheelbarrows and donkey-carts.

Throughout this study, however, we will normally refer to collection as secondary collection. Collection starts when waste leaves the house (and starts becoming a 'public matter'). Our major concern is how these processes are managed to prevent public health hazards and environmental degradation, and how they contribute to sustainable development. Collection of waste from primary collection and transporting it to disposal sites is dealt with in more detail in Section 6.4 where we address institutional arrangements (modes of collection, etc.) (see Furedy, 1997).

6.2.2 Recycling of waste (recyclable items/materials)

The term recycling is commonly applied to the processing of waste materials into new products that may or may not resemble the original material. Household waste is a source of raw material for recycling. In fact, most of the waste produced in Accra is recyclable. However, the waste is often not separated at the source. Like in most cities in developing countries, recyclable materials are recovered from mixed waste in Accra. As the municipalities are finding it more and more difficult to acquire land to dispose of their waste, recycling to reduce the volume of waste for final disposal is becoming an interesting issue not only for academicians and researchers, but also for the government (policy makers), the local authority and the general public. In fact, recent events have forced it into the political arena and appropriate laws to deal with this problem have to be enacted at the spatial level. Necessity, it is said, is the mother of invention. The scarcity of, and difficulties in, acquiring new lands for waste disposal would perhaps force all the major actors to

start thinking of evolving sustainable measures for waste management in general and in adopting *waste minimisation* measures (such as recycling) to reduce the volume of waste sent for final disposal (see Furedy, 1997).

During the fieldwork, we also went round to see the types of recycling factories that exist in the city. What struck us most was the level of sophistication of products that come from some of the indigenous cottage industries. We identified four main sectors in the recycling industry in the Accra metropolitan area. These are aluminium scraps, iron scraps, paper waste, and plastics. Below are brief discussions of these important, but often neglected activities in terms of their economic impact on employment and income.

a) Aluminium scrap

The aluminium sector is dominated by small indigenous industries normally run by one or two people and often located in the premises of their houses. It is amazing the type of products that come out of these small indigenous cottage industries. Using earth wares, the artisans melt the aluminium scraps and mould them into all kinds of products, particularly domestic cooking utensils. This process is real recycling. Unfortunately, the size and volume of production from these cottage industries is very small. Recycling of aluminium scrap is a vigorous micro business in Accra as well as in many other Ghanaian cities and urban centres. However, this is carried out by indigenous industries, normally in the houses, with serious and potentially alarming environmental and public health consequences.

b) Iron scrap

Recycling in the iron scrap industry is the opposite of what happens in the aluminium sector. This sector is dominated by heavy industries such as the Tema Steelworks and Wahome both located at Tema – the twin city of Accra. Tema steelworks produces all kinds of steel including iron rod, sheets, etc. Medium and heavy industries in this sector operate similarly to elsewhere in both developed and developing world though with a lower level of technology. These industries, besides using imported raw materials for their businesses, also use iron scraps as a cheap source of raw materials. Iron scraps abound in old car and dumps. There are also many indigenous artisans such as blacksmiths, welders and mechanics using iron scraps to mould various types of implements such as cutlasses and spare parts for vehicles. The artisans, *e.g.* blacksmiths operate at various levels – from one-man to about 10-men indigenous industry. Welders are one group of artisans, who make extensive use of iron scraps, particularly from old vehicles and iron sheets. In Ghana, the Suame ‘Magazine’ in Kumasi is famous among artisans using old scraps to produce many kinds of implements and spare parts. They even produce

assembling materials for building vehicles, bodies with the exception of engines. In Accra, there are artisans (*i.e.* car mechanics, fitters, blacksmiths and welders) at "Kokompe" (at the Darkuman Junction) and Abbossey Okai who use iron scraps that abound in these areas. There are also small and micro-scale welders' workshops which build all types of implements and spare parts for machines, including vehicles. Some even build vehicles bodies. The establishment of the Intermediate Technology Transfer Units (ITTUs) in some regional capitals and urban centres in the country by the government has benefited some artisans in this sector. These IT-TUs train artisans and help them to participate in the recycling industry. Many small-scale recycling industries have been established or enhanced following training received from ITTUs. However, the activities of the indigenous artisans using iron scraps could be characterised as the reuse of iron scraps rather than recycling in the real sense of the word. At best it could be described as semi-recycling, since some form of transformation take place, which is different from the original product.

c) Waste paper

Waste paper recycling is now on the increase. It seems it is easier to recycle waste paper than perhaps other items such as iron and aluminium scraps. However, only specialised industries can do it, perhaps because of the investment or technology needed. Small indigenous industries are not found in this sector. Printing houses are a major source of waste paper for recycling. Factories such as the Super Paper Products Company Limited (SPPC) located in Tema produce toilet rolls and sheets for writing paper, exercise books for the printing and publishing sectors. It is not very clear whether there is any recovery of paper from households or mixed waste, since the households do not make conscious efforts to separate waste from the source. 'Pure' materials are valuable. These recycling factories prefer waste paper that has come from printing firms, etc. However, the recycling industries face serious competition from other users of waste paper such as market women, street sellers who use the paper to wrap wares, food, etc. instead of plastics or polythene bags. Others use waste paper, particularly newspapers, as toilet paper.

d) Plastic waste

Plastic bags have come to replace paper in shopping activities and plastic is used considerably in the day-to-day activities of every household. However, their disposal is causing serious environmental problems. Littering of plastic bags, particularly in lorry parks, markets, poor residential areas and along the streets is a serious problem in Accra. The German government, through the German Technical Co-operation (GTZ) has, in one way or the other, been supporting waste management in Accra. Apart from providing technical assistance (grants, vehicles, etc.) it has also helped to establish a recycling factory called City Waste Management Limited

(CWM⁶²) in 2000 at Afoman near Pokuasi in the Ga District. It also helped CWM to provide kiosks at various points in Accra to collect plastic waste from the public. City and Waste Co. pays ₵400 per kilogram for plastic waste brought to the kiosks. This waste is sent to the factory at Pokuasi for cleaning and treatment from which the factory makes products such as polythene bags. One of the reasons for establishing the recycling factory was to make use of the cheap source of raw materials, i.e. mop up the plastic bags littering the city of Accra and provide a clean environment. Other reasons included providing a source of employment to the people in order to improve their income.

e) Composting

In 1979, the government set up a large compost plant at Teshie-Nungua in Accra to process part of the large volume of domestic waste into manure for agriculture. Since it started operation in 1980, this compost plant has not operated at more than 10% of its capacity (see Table 6.1), despite the abundance of organic waste in the city. According to Etuah-Jackson *et al.* (2001) it can, in theory, produce about 20t h⁻¹, which is approximately 38,000 tonnes annually. For reasons such as lack of electricity and water and technical problems, it has worked only occasionally and has gradually become a near total disposal site.

Table 6.1 Compost production of the Teshie-Nungua Plant 1994-1997

Year	Production in tonnes
1994	495
1995	3506
1996	1605
1997	915

Source: AMA/WMD and Etuah-Jackson *et al.*, 2001

Managers of the plant also attribute the problem of low operating capacity to the cost of transporting the waste to the plant, which is sited far away from where most of the organic waste in the city is generated.⁶³ Large quantities of waste are generated in Accra every day, particularly in the large market. According to the AMA, the total daily generation of organic waste from these markets has been estimated to be about 175 metric tonnes. Another constraining factor referred to was the contamination of waste. Respondents to a survey carried out by the author in 2000,

⁶² No relation to City and Country Waste Ltd. (CCW).

⁶³ Again as a result of poor land-use and building permit policies, estate developers have now encroached upon the area, to the extent that estates surround the compost. The odour from the plant causes considerable inconvenience to the residents in the area.

assert that it would be better if smaller compost plants are sited at other vantage points to process waste from those areas and to reduce the huge transportation cost. Also respondents said education on waste separation at the source should be intensified to reduce contamination (see Chapter 7). Since the waste is mainly organic, it is better to separate the organic waste at the source into their various components. A study by the WMD/AMA in 1992 indicates that, prior to the 1990s, the organic waste component was about 65%. However, the organic content has dropped to about 45% since then, thanks to increased use of paper and plastics.

In Accra, in addition to the large plant at Teshie Numgua (operated by the WMD of AMA) and a second smaller plant at the timbre market in the Ashiedu Keteke sub-metropolitan assembly of AMA, some individuals have started to collect and produce compost waste from unofficial dumping places. Some sell it to horticulturists (Etuah-Jackson *et al.*, 2001). Waste in Accra is composted on a very small scale in comparison with, for example, Issia, Côte d'Ivoire, where several pilot composting projects have been established for peri-urban agriculture. Composting may have considerable economic potentials in areas where urban agriculture is relatively common (Asomani-Boateng *et al.*, 1996; Doan, 1997; Lewcock, 1995; Furedy, 1989). Some neighbourhood groups use organic waste for livestock. The use of organic waste⁶⁴, particularly animal droppings (cow dung and poultry droppings) in peri-urban agriculture is also quite important among vegetable growers in and around the city. Almost all vegetable growers in Accra use either cow dung, or droppings from poultry farms, or both, in addition to artificial fertiliser. Reusing organic solid waste as compost in urban agriculture is a challenge for urban planners (Asomani-Boateng and Haight, 1999). Organic farming is more environmentally friendly than the use of chemical fertiliser. However, agricultural produce from organic farming is a little costly.

6.2.3 Reuse of materials

Used glasses are cleaned and reused. Used bottles are patronised extensively. Broken bottles are used to produce ornaments. This is particularly notable among the Ga Dangbes. Wood waste, particularly sawdust from carpentry workshops and sawn-mill industries, abounds in the city. Using sawdust to produce plywood and boards for furniture, and bridgitte for firewood might regulate exploitation of the fast depleting forest resources. However, sawdust is only reused on a very small scale for reasons very difficult to decipher. It might be due to the abundance of

⁶⁴ At the Korle Gonno liquid waste treatment plant in Accra, human waste is mixed with sawdust to produce manure for gardening and horticulture. This takes place on a small scale. The plant is virtually out of place.

wood, at least for now, *vis-à-vis* the cost of turning sawdust into re-usable materials. The reuse of used oil and other petroleum products would reduce the volume of what would have flown freely to pollute river bodies, streams and lagoon. A large portion of oil waste from car mechanics in Odawna, Abbassey Okai and other mechanic workshops flows freely into the Odawna and other streams. If these used engine oils were to be collected and reused, it would help to reduce the level of pollution from oil waste into river bodies. Tyres and tubes are used to produce certain spare parts. The reuse of old tyres is widely practised by private commercial transports; companies import large quantities of used tyres from Europe and elsewhere for reuse. Others also use old tyres and tubes to produce native sandals for farming purposes. Another area of importance is the reuse of waste cloths, which is very prevalent among a large segment of the population, and cuts across social divide. Many households in poor and middle-income areas use food leftovers and peels of to feed their domestic animals. Some even sell peels of plantain and cassava to their neighbours who might want them to feed their animals.

6.2.4 Waste disposal of non-recyclable items/materials

Local authorities or their appointed agents are expected to carry out waste disposal at dumpsites. By the beginning of 2001, there was an only one officially recognised waste disposal site for the whole of Accra, at Mallam Gbawe; a suburb of Accra which falls under the Ga District Assembly. Accra does not have incinerators or landfill sites. It is yet to be assigned its first landfill site, which the local authority has been trying to build at Kwabenya since the late 1990s. Data on how much waste is reused, recycled and used for compost is not available. The disposal site is an ordinary waste dump characterised by open burning of waste. AMA agents manage the disposal site. There was no waste disposal site within the boundaries of the Accra Metropolitan Assembly. This is typical of the ecological footprints of cities (see Rees, 2000). In recent years, however, waste disposal has become one of the major problems for local authorities in the wake of rapid urbanisation in the country and scarcity of land for the present practices for waste disposal. This is also partly due to the government's inability to come up with a sustainable solid waste management policy to address the root causes of the problem. With urban populations growing faster than the facilities meant to handle the waste generated, hills and mountains of solid waste have become regular features of the urban landscape these days. The recent garbage war between the AMA and residents near waste dumping and landfill sites in Mallam, Gbawe and Kwabenya respectively, both of which are within the built-up area of Accra Metropolitan Area, but fall under the Ga District Assembly, symbolises the ineffective waste management policy of the metropolitan authority

6.3 Policy interventions in solid waste collection in AMA in the recent past

The turnover of government policy interventions in solid waste collection in Accra is very high. On the one hand, it might perhaps signal the government's continuous search for better solutions in its attempt at reforming the institutional setting. On the other hand, it might be an indication of unsustainable policies (*i.e.* a sort of trial and error). In view of the enormity of problems, the AMA has tried many things to address them over the past 15-20 years, albeit with mixed and sometimes even counterproductive results. Before analysing these interventions, it is important to note that they all have to be seen against the background of a few more encompassing policy reforms that took place in Ghana, notably decentralisation and privatisation. These reforms, discussed in the Chapter 5, provide the context for the analysis of institutional arrangements in solid waste collection in the Accra metropolitan area. In this section, we will first highlight the experiences of AMA with the pay-as-you-dump (PAYD) system. Next, we will address some of the changes in solid waste collection following the 1988 decentralisation policy. We finish by detailing some recent changes and developments.

6.3.1 The PAYD system

Starved of funds, the AMA introduced the PAYD in 1985 to generate additional income for its waste collection operation. The central government had been the main financier of waste management in the metropolis. However, since the implementation of the structural adjustment programme (SAP), drastic cuts in government finances in real terms meant financial difficulties for the local authority. Consequently, in Accra, the local authority asked residents using the collective container collection system to 'pay-as-they-dump' their waste into central communal containers or at designated dumping sites. In no time, Accra became utterly filthy as residents, in order to avoid payment for dumping fee, dumped waste indiscriminately into open spaces, gutters, drains and streams, thereby choking drainage, causing floods and environmental health hazards. In 1991, the central government ordered the city authority to abandon the PAYD policy. The PAYD policy had yielded the local authority some revenue, but at the expense of severe environmental degradation, deterioration in sanitation and increased public hazards. Many changes have taken place since then. However, except in a few areas, solid waste collection is inadequate.

6.3.2 Organisational changes in solid waste collection since 1988

Ghana's adoption of decentralisation and privatisation policies has profoundly affected the organisation and interventions in solid waste collection. Until 1984, the Medical Officer of Health and the Chief Mechanical Engineer's Department of the

Accra City Council (the predecessor to AMA) were jointly responsible for the collection and disposal of solid waste. In 1984, these two departments were separated into Metropolitan Environmental Health Department (EHD) and Waste Management Department (WMD). The creation of the WMD and its role gained momentum since 1988 as a result of the decentralisation policy and the district assembly concept. Since then, solid waste collection in Accra has witnessed several changes. However, even though the WMD is responsible for the collection and disposal of solid and liquid waste in Accra, it has neither its own budget nor budgetary authority. The WMD is almost entirely dependent on AMA that controls both the size of its budget and spending and decides on the policies and priorities of action. Besides, the AMA awards contracts for solid waste collection, but it is the central government which has the final say in the award of large contracts.

One of the objectives of the 1988 decentralisation policy, based on the idea of empowering people through the District Assemblies, was to bring a lot of departments directly under District Assembly jurisdiction, thereby abandoning long vertical lines of command and control and enhancing their responsiveness to local needs. However, the WMD has neither its own budget, nor budgetary authority. The AMA controls the size and spending of its budget and decides on policies and courses of action. A major drawback in solid waste collection in the metropolis is the chronic shortage of finance due to inadequate funding and poor cost-recovery capabilities. The poor experiences with the pay-as-you-dump (PAYD) policy had made the introduction of user charges for the prevailing collective container collection system politically controversial. In an attempt to improve the situation, the WMD work was further decentralised in 1992 by transferring day-to-day operations to the six sub-metropolitan assemblies. It gave the sub-metropolitan areas some resources (mainly personnel such as district cleansing officers) and logistics (such as vehicles and equipment) to carry out their new responsibilities. Laudable as this may sound, this policy created more waste collection problems in the sub-metropolitan areas than before. The transfer of resources did not match the transfer of responsibility. Neither did the sub-metropolitan authorities have rating powers for solid waste collection. In the absence of adequate funding, the sub-metropolitan assemblies performed poorly. Besides, when a vehicle of a sub-metropolitan assembly broke down, refuse piled up in that area because it could not borrow from any of the other sub-metropolitan assemblies, since each sub-metropolitan area used its vehicles and equipment solely for its area of jurisdiction and independent of others and each of them suffered from serious backlogs. Previously, the WMD used its fleet of vehicles and equipment as a pool from which it allocated them to the areas which needed them. Even though on paper the AMA/WMD has decentralised solid waste collection to the sub-metropolitan assemblies, in practice the WMD is still in

charge. The WMD had to intervene frequently by organising crash programmes in the weekends to collect the piled-up waste. In fact, the decentralisation exercise within AMA has helped to complicate further an already highly complex and confusing division of tasks and responsibilities in solid waste collection. But was WMD really in charge? Decentralising a poor or non-functioning institution only results in passing on the problems to a lower administrative level, and probably even worsening it as the least powerful actors – sub-metropolitan assemblies – receive the least from central funding that trickles down through the system, each level reaping the maximum it can acquire. The sub-metropolitan assemblies function as an outpost of the WMD. The WMD supervises its own workers in waste management through its cleansing officers at the various sub-metropolitan authorities. Cleansing officers monitor and evaluate both public and private service providers involved in solid waste collection in their area of jurisdiction. The cleansing officers are also answerable to their superiors at the WMD's head office.

Currently, scores of agencies and officials are expected to exercise some tasks in solid waste collection, each having their own supervision, monitoring and evaluation tasks. In addition to the WMD and the sub-metropolitan assemblies, these include the Environmental Health Department (EHD) of AMA, the sub-metropolitan assembly, the assembly members, area councillors and unit committee⁶⁵ members, the EPA and the Ghana Standard Board. In 1992, the AMA reintroduced sanitary health inspectors at the EHD with powers to visit homes randomly to check sanitation and prosecute offenders of sanitary byelaws. Government organisations such as the Environmental Protection Agency (EPA) and the Ghana Standard Board collaborate with the AMA on environmental management. The EPA, as the government agency responsible for protecting the environment, is expected to provide guidelines and advice on waste management to the AMA. The Ghana Standard Board is expected to check the equipment used by service providers periodically to ensure cleanliness. The sector ministry (*i.e.* Ministry of Local Government) has overall responsibility for AMA's activities. In essence, all arrangements for waste management are subject to a variety of agencies. In practice, it is a different story though. All agencies are responsible in one way or the other, but most are not accountable, particularly in this era of decentralisation. In such a complicated system, nobody or no single actor feels ultimately responsible, and everyone can detract attention from themselves and point to the weakness of other actors as the prime cause, leading to severe accountability problems.

⁶⁵ Not all the areas have their Unit Committees installed because the inconclusive results of some of the 1998 Unit Committee elections. In the absence of such grassroots structures, the supervision of waste management in the communities is being hampered greatly.

Decentralisation as an instrument is a wake-up call for residents to take greater responsibility as regards waste management in their area. The AMA uses the assemblymen who are the elected representatives of the communities in the metropolitan assembly to monitor, evaluate and supervise waste management in their areas. Unit committees compliment the functions of the assemblymen. However, the problem of solid waste collection in Accra is not centralisation per se but lack of funding. In the absence of sufficient funds for the local authorities to operate solid waste collection services, the need for private sector participation in service delivery was reinforced.

The desire to move in the direction of private sector participation in solid waste management was already spelt out in various policy documents, including the influential World Bank-sponsored Urban Environmental Sanitation Project (World Bank, 1996). Remarkably, privatised services were already an established fact and an accepted practice long before they became official policy. The assumed potential of the private sector was confirmed by the 1995 pilot programme put up by the AMA with a few local contractors engaged to collect solid waste in certain areas under franchise. The success of these trials has marked the start of WMD's privatisation campaign that was supposed to bring 80% of collection operations under private sector responsibility by the year 2000.

The AMA started the pilot programme in 1997⁶⁶ with a few private local contractors who had to collect solid waste in parts of Accra. After successful trials with the private waste contractors, the AMA introduced privatisation into waste collection in 1997. The AMA retained the private contractors who participated in the testing phase and gave them specific areas to operate in. Following the privatisation of solid waste collection, many private service providers came onto the scene, but few remained as the 'ill-equipped' and non-performing ones were weeded out. By the end of 1998, most parts of Accra were serviced through private contractors who jointly collected about 70% of the municipal waste and accounted for about 72% of the overall performance. Despite the apparent successes achieved by the private local service providers, on 17 July 1999 there was a major policy change on solid waste collection.

⁶⁶ Private contractors have been involved, albeit in an informal manner, in the waste collection business since time immemorial, perhaps as far back as waste collection by trucks became necessary in Accra. However, 1997 marks the formal involvement of the private sector in waste collection following the introduction of the privation policy, after the 1995/1996 pilot project of private sector participation in waste collection in Accra.

6.3.3 Recent changes and developments

In July 1999, a major central government intervention entirely changed the situation of solid waste collection in Accra. A joint Canadian-Ghanaian private venture-ship – the City and Country Waste (CCW) – was granted a monopoly in solid waste collection services in the capital. Under the contract agreement, the AMA procured solid waste disposal equipment at a total cost of US \$ 10.3 million for CCW on a five-year lease.⁶⁷ The reason for the government to interfere in local government affairs – as a directly contrast to the idea of decentralised government – was its growing indignation at the failure of the AMA/WMD to deal adequately with the mounting problem of solid waste collection despite modest improvements made through its privatisation policy. With the help of a Canadian loan new equipment was bought – the familiar package deal that can be observed all over the developing world – to replace the old and inadequate WMD stock. The AMA was ordered to hand over all its collection trucks, equipment and workshops to CCW and hence the WMD was effectively removed from the business of waste collection. According to the then Minister of Local Government, “it is anticipated that daily waste collection and disposal would rise considerably from the present level of about 700 tonnes a day to about 1,200 tones a day” (Ghana Daily Graphic 17 July 1999). Although CCW was under no obligation to engage the infant local garbage collection industry, it sublets several areas to well-performing local contractors.⁶⁸ However, in recent times, there have been marked improvements in the cleanliness of waste collection points in areas such as Nima, which used to be eyesores. This is a result of the regular frequency of collection by CCW. In the house-to-house system, most of the residents are satisfied with the cleanliness of the service (see Chapter 7). The problem is mainly with the collective container collection system. In most cases there is a correlation between the frequency of collection and cleanliness of the collection point.

The government of Ghana, recognising the cities’ near insurmountable waste management problems, declared sanitation a national priority in 1999. It allowed the

⁶⁷ According to Mr. Kwamena Bartels (1999), the agreement was shrouded in so much secrecy that even members of parliament from the government party for Accra did not know what it entailed when the issue was put before the assembly for approval. Despite questions and a press conference by the opposition parties both the (NDC-controlled) parliament and the AMA were forced to swallow the government’s decision on the issue.

⁶⁸ This sudden move interrupted the planning of our research project. The household questionnaires were carried out before CCW entered the scene, while we planned to interview the local contractors a little later. The decision to grant CCW monopoly in solid waste collection took them entirely by surprise and made them reluctant to cooperate (out of fear to loose their work). By mid 2000 – when the situation had calmed down a little and most were still in business (although the anxiety continued) – a new attempt was made and about a dozen interviews with contractors could be completed.

metropolitan assemblies of Accra, Kumasi and Shama-Ahanta East uniquely to apply the District Assemblies Common Fund (DACF) – a fund that was created exclusively for development – to improve sanitation and waste management (Ghana Daily Graphic, 1999). To help increase the funding capacity of the AMA on behalf of solid waste collection, the government approved a new rating system for solid waste collection user fees for all categories of residents in Accra in November 1999. In April 2000, the new rates for user fees for solid waste collection in Accra were set at ₵40,000 for rich residential areas, ₵25,000 for middle class areas and ₵10,500 for poor areas. Very poor areas were to pay daily-rated fees yet to be determined. However, for political expediency, the central government delayed the implementation of the new user fees till after the December 2000 election. In July 2001, the new government cancelled the CCW contract agreement and called upon the private local contractors to provide the waste collection service. Such policy changes have profound effects, not only on the institutional arrangements for solid waste collection (see Section 6.4), but also on the sustainable development of solid waste collection in Accra.

6.4 Current institutional arrangements in solid waste collection

In small rural settings, people sweep up around their dwellings and carry the waste to the refuse dump normally on the outskirts of the village. In urban settings, households clean their houses and gutters around the houses and leave the waste at designated points. They cannot send the waste to the final disposal sites, which might be far away on the outskirts of the city. Somebody else or an agency has to collect this waste and bring it to the waste disposal sites. This requires organisation (institutions and institutional arrangements). Institutions⁶⁹ dealing with waste management range from government agencies to the household themselves and include a number of critical intermediaries working at various levels. Besides the household, there are at least seven different kinds of institutions involved in waste management in Accra. These are (i) the central government, (ii) the regional government, (iii) the local government (district assembly, including sub-metros and unit committees), (iv) traditional authorities, (v) private enterprises, (vi) non-governmental organisations, and (vii) parastatal organisations. Some of these institutions were established as a result of decentralisation and privatisation policies. Together they form a very complex and complicated institutional framework. This picture is further complicated by the organisational structure of local government authorities. The AMA for example, has six sub-metropolitan assemblies, which are further divided into area councils and unit committees. These local administrative units play varying roles in the design of the institutional arrangements for solid waste collection.

⁶⁹ Institutions can loosely be described as the rules of the game (North, 1996: 3).

Table 6.2 Selected research localities for solid waste management in Accra

Sub-metropolitan assembly	Locality	Socio-economic status of area	Reason for selection
Okaikoi	Achimota	Low/middle	Central communal container provided and run by AMA (WMD)
Okaikoi	Kaneshie	Middle	Central communal container provided and run by private contractor <i>e.g.</i> Gee Waste
Ayawaso	Nima	Low	Central communal container provided by AMA but run by private contractor
Kpeshie	La	Middle/low	Central communal container provided by AMA but run by community-based organisation (CBO) La Mansaamoo Kpee ⁷⁰
Ayawaso/ Kpeshie	Airport Res. Area/ Cantonments	High	House-to-house collection by AMA with high technology (compaction trucks)
Ayawaso	Dzorwulu/ Roman Ridge	High	House-to-house collection by private contractor with high technology (compaction trucks)
Ayawaso	Abelenkpe	High	House-to-house collection by private contractor using low technology: open trucks, etc.
Osu Clottery	Adabraka	Middle	Mixture of house-to-house and central communal container collections. In some areas waste pickers collect waste from houses and dump them into central communal containers provided by AMA and run by private contractors.

Household solid waste collection in Accra is organised through various so-called institutional arrangements. An institutional arrangement in this study is defined as enduring and potential (mutually beneficial) patterns of relationship between two or more actors based on a written or verbal agreement and having a concrete, physical manifestation. In the case of solid waste collection the relationship finds concrete expression in things such as garbage bins, transfer stations, disposal sites, and collection vehicles. Institutional arrangements may be either formal or informal, *e.g.* those that are supported by the rule of law and those that are embedded in established social practices. There are three identifiable groups of actors or stakeholders⁷¹ in solid waste collection in Accra. These are service providers, consum-

⁷⁰ Our investigation shows that in La, it is the AMA and not the CBO which collects solid waste in the area, contrary to what the CBO and the residents led us to believe at the start of the research. In fact, this CBO is involved only in liquid waste management in La. This was confirmed by the WMD of the AMA. However, as Etuah-Jackson *et al.* (2001) noted, some NGOs and CBOs operate waste collection service in specific communities predominantly via small tractors and push carts. An example of a CBO involved in waste collection in Accra is the Ashiedu-Keteke Community Participation Project (AKCPP) in Usher Town.

⁷¹ Stakeholders in this study often refer to solid waste service consumers; service providers and policy makers on waste management in the Accra Metropolitan Area.

ers, and the local authorities. The last group comprises politicians (including assembly members), administrators (decision-makers) and official (experts/technocrats who prepare and implement policies). It is important to note that in our perception, consumers are also important actors within the arrangement, despite the fact that they are usually not contract partners. They actively participate in the arrangement by offering their waste for collection and sometimes by paying for the service.

The institutional arrangement that has materialised in a particular area depends on numerous factors, including wealth, physical characteristics, the strength of community organisation and the prevailing policy of local authorities. The present institutional arrangements are very much influenced by the decentralisation and privatisation policies, though some of these arrangements were already in existence before these policies were introduced. An attempt was made to identify all the existing institutional arrangements in solid waste collection in the metropolis. For that reason the situation in all localities was observed. Finally we selected eight research localities, each representing a particular type of arrangement. Sometimes such an arrangement was very common and could be found at numerous localities;⁷² sometimes it concerned a unique arrangement that could only be identified at that particular place. Table 6.2 shows the areas, their socio-economic status and the reason for selecting them for our inquiry.

As there is a correlation between the type of institutional arrangement and the socio-economic status of the area, the latter is implicitly dealt with. Each research locality is characterised by one dominant mode of solid waste disposal, one dominant mode of solid waste collector, and one dominant socio-economic status. Characteristics and constraints of an area shape the parameters for its institutional arrangements. The eight research areas for this study are Achimota,

⁷² A locality in this study refers to only the part of an area where the service of an identified institutional arrangement was carried out. The status of a locality may not necessarily refer to the whole area/suburb but only that part of the area under reference. In some cases however, the status of a locality may be similar to the rest of that area *e.g.* Airport Residential Area, Roman Ridge, Dzorwulu, Osu RE, Cantonment, Ridge, East Legon and Abelenkpe. In these areas, the status of any part is representative of the others at least in terms of waste management practices. In much the same way, any part of areas like Nima, Sukura, Zongo Lane, Town Council Line, is also representative of the whole area in terms of status and waste management practices. However, in places like La and Achimota there are contrasting localities (rich, middle and poor neighbourhoods) within the township. In La, there are areas such as Labone, which are comparable to any of the rich neighbourhoods in Accra. The waste management practices are similar to their corresponding areas elsewhere in the metropolis. Geographical representativeness was not a major consideration in the selection of the research localities. The aim of this study is not to describe the waste situation in each of the sub-metropolitan areas as such, but to make a purposeful sample survey based on the eight institutional arrangements identified in order to trace significant differences between these arrangements.

Kaneshie, Nima, La, Airport Residential Area/Cantonment, Dorwulu/Roman Ridge, Abelenkpe and Adabraka. These localities can be grouped into three categories in terms of socio-economic status and level of development namely rich, middle-income, and poor⁷³ areas. The rich and invariably developed areas are Airport Residential Area/Cantonment, Dorwulu/Roman Ridge and Abelenkpe. The middle-income areas are Adabraka and Kaneshie, whilst the poorly developed areas are Nima, La, and Achimota.⁷⁴

The survey of the institutional arrangements started with the assumption that there were eight institutional arrangements for each of the eight selected research localities. After having studied the results of the household survey it appeared that in fact only two independent variables really mattered: the mode of collection (collective container versus house-to-house collection) and the type of provider (public versus private), giving four distinctive arrangements. Of course, the type of technology and the question of who provides the containers can make a difference to the service providers and workers involved, but the number of interviews on the supply side only allows us to make a few qualitative remarks in that respect. For the sake of the current analysis we will confine ourselves largely to a discussion in terms of the four basic types of institutional arrangements. All of these are officially recognised (formal) either because the service is entirely run by the WMD or by its accredited contractors. However, occasionally there are "informal" arrangements on top of the dominant type as for example in parts of Adabraka where about 90% of the inhabitants pay waste pickers (otherwise called *kaya boila* in the local parlance) to carry their garbage to the container sites, and in Achimota and Kaneshie where residents pay a small fee of ₵100 to a person hired by the assemblyman to keep the site clean. Most of these informal arrangements have ceased since the arrival of the CCW.

6.5 Basic types and characteristics of solid waste collection

Two broad modes of solid waste collection operate in Accra. These are house-to-house and the central communal container (collective container collection) systems. Each of these modes of collection has both publicly and privately provided

⁷³ The categorisation of the areas into rich, middle and poor income areas do not mean that all the people who stay in the poor areas are poor. Neither does it mean that there are no poor people living in the areas classified as middle-income areas. However, for the rich areas, it is possible that only rich people stay there because of the high cost of accommodation. For practical purposes, the middle-income areas are often grouped together with the poor ones in terms of mode of waste disposal (i.e. house-to-house and collective container collection).

⁷⁴ The classification of residential areas in Accra into income levels, status or level of development has been carried out by the AMA, Land Valuation Board, the Town and Country Planning Department, the Ghana Statistical Service and other related government agencies.

institutional arrangements. Thus, the four dominant institutional arrangements for all the eight selected research localities are: (i) publicly provided house-to-house collection, (ii) privately provided house-to-house collection, (iii) publicly provided collective container collection, and (iv) privately provided collective container collection. The house-to-house system operates in rich and some middle income areas, whilst the collective container collection system operates mainly in the poor areas and the remaining middle-income areas of Accra. The entire metropolis under coverage is serviced by either publicly or privately provided house-to-house or collective container collection. Figure 6.1 at Section 6.2.1 illustrates the prevailing mode of collection in Accra. In terms of percentages, by mid 1999, the collective container collection and house-to-house collections form 70% and 30%, respectively, of areas with waste collection coverage within the metropolis. Table 6.3 shows the major characteristics of both the house-to-house and collective container collection services. We will elaborate on these characteristics below, paying attention to primary storage, mode of waste disposal and collection, frequency of collection, technology, coverage and financial arrangements.

Table 6.3 Major characteristics of institutional arrangements

Variables	Institutional arrangement	
	House-to-house collection	Collective container collection
Standard collection frequency	Weekly	Daily
Dominant waste storage container	Plastic bins	Metal containers
Mode of transporting solid waste	Multi-lift truck, open truck, three-wheeled tractor, pushcart, and wheel barrow	Skip-loader
Mode of lifting waste bins/containers	Multi-lift trucks (mechanically) and manually	Skip-loader
Main areas of operation	Rich and middle income areas	Poor and middle income areas
Characteristics of area	Good road-network, excellent accessibility to houses	Poor road network and often poor accessibility to houses
User fees	Yes	No
Service provider paid by	Service consumer	Local authority (AMA)
Private contractor pay dumping fees to AMA	Yes	No

6.5.1 Primary storage

There are two major modes of storage for household solid waste. The first category uses polythene bags, carton boxes and buckets. The second group uses officially approved plastic containers. The type of waste storage facility used in an area depends on the medium of its disposal. In most cases, the majority of consumers in areas with house-to-house system use approved plastic containers to store waste.

This is perhaps due to the fact that service providers collect the waste once or twice a week. In poor areas where the collective container collection system operates, residents use all kinds of storage facilities, including polythene bags, carton boxes and buckets, because storage is for a short period, often less than a day. Besides, most poor people do not like to spend much money on waste storage containers. Under the collective container collection system, residents can, in a day, send their refuse to the central communal container as often as they wish. The central communal containers are to be emptied daily by the AMA or its accredited agents. The predominant type of storage linked to the collective container collection system results in more littering and less hygiene.

6.5.2 Mode of waste disposal and collection

In all the investigated areas, there is almost exclusive usage of the mode of disposal offered through the institutional arrangement. However, there is perhaps a reason to believe that people will not have disclosed possible unofficial dumping practices to the interviewers. The only exception is in Adabraka, where 90% of consumers indicated that in addition to the official system, they use waste pickers to collect waste from their houses to central communal containers, even though they might also use some other unofficial means to dispose of waste. Adabraka, located in the commercial hub of the city, is a modestly rich neighbourhood with some few middle and poor income areas. It is the poor and some middle-income areas that patronise the collective container collection system. Because of their relative wealth and commercial activities, since almost every resident in Adabraka engages in one commercial activity or the other, they can afford to pay waste pickers if the official means fail to deliver.

6.5.3 Frequency

The frequency of collection for house-to-house and collective container collection systems is once per week and once each day, respectively, irrespective of whether the type of provider is public or private. The AMA supervises both operations. The frequency of collection of once a week for the house-to-house system is very low for a city in a tropical climatic zone. However, in a few areas such as Abekah Lapaz, where there is a high occupancy ratio, and also at Teshie-Nungua Estates and Grader House Estate, the frequency of collection is twice a week. The higher frequency is reflected in the user fees residents have to pay.

6.5.4 Technology

The mode of waste collection determines its technology. In the house-to-house system service providers use various types of technologies such as multi-lift trucks,

open trucks, three-wheeled tractors, power tillers, donkey-carts⁷⁵, pushcarts and wheelbarrows. The type of equipment used to collect waste in a house-to-house area could change, *e.g.* from an open truck to compaction truck or *vice versa*, if the provider switches from one technology to another depending on what is available and possible. However, there seems to be a high degree of stability as regards the mode of collection (*i.e.* house-to-house or collective container collection). The multi-lift truck can lift and empty the waste container mechanically. In the other cases it is done manually. Since manually operated systems require more workers per tonne than, for example, the multi-lift system, the type of technology determines the demand for labour. The publicly provided house-to-house system usually has better technology: compaction trucks, otherwise called multi-lift trucks. The privately provided house-to-house services use all manner of vehicles including power tillers and open trucks. However, the trucks of the better-endowed private contractors such as Gee Waste and Daben Cleansing compare favourably with the public ones. On the other hand, containers for the collective container collection system are such that only skip-loaders can be used. There is a correlation between the type of technology, the wealth of an area and the layout of an area. Map 6.2 shows which type of technology is used in which part of the city.

6.5.5 Coverage

According to the AMA, the total coverage of waste collection in the metropolitan area is about 60-70%. The remaining 30-40% is collected either irregularly or not at all. According to the AMA, until mid 1990s, of the total collection coverage of 60% in the whole metropolis the WMD collected 80% of the solid waste, whilst private sector collected 20%. From 1997 onwards, the proportion of waste collection by the public sector kept on decreasing to a ratio of about 60% and 40% for the public and private sectors respectively by early 1998. Before 17 July 1999, AMA provided about 234 central communal containers and installed them at various locations in Accra. Accredited private contractors of the AMA lift 153 of the containers, whilst the AMA (WMD) lifts the remaining 81 containers. Since 17 July 1999, AMA's WMD ceased collection of solid waste collection. These activities were taken over by private service providers. Tables 6.4 and 6.5 show the breakdown of the scope of operation of the private contractors in collective container collection system in the six sub-metropolitan areas. These exclude the additional containers Gee Waste Company provides for its collective container collection operations. The private contractors provide more than half of the solid waste collection in the city. This means that the private contractors were providing more than 70% of solid waste collection in the metropolis. The privatisation policy that

⁷⁵ Donkey-carts are no longer in use.

took off in 1997 was designed to increase private sector participation in solid waste collection to about 80% by the year 2000 (see Figure 6.1). The National Environmental Sanitation Policy (MLG&RD, 1999) requires local government authorities to provide at least 20% of waste collection services in their areas. This is to ensure that the WMD can, among others, assess and appreciate better the financial cost of service provisions.

Table 6.4 Distribution of AMA's central communal containers as at June 1999

Sub-metropolitan assembly	Location	Service provider	No. of containers
Ayawaso	Nima, Maamobi, New Town	ABC	31
Ablekuma	Abbosey Okai, Zongo Lane, Ayigbe Town, Town Council, Mateheko, part of Dansoman, Russia, Sukura, etc.	Stanley Owusu	26
	Korle Gonno, Mambrobi	Liberty Waste Service	29
Ashiedu Keteke	James Town, Accra Central	Merskworld	25
Okaikoi	Abeka, Achimota, Akweteman,	Merskworld	12
Kpeshie	La, Teshie,	Daben Clenson	30
Osu Clotley & some parts of Accra	Osu Clotley & some parts of Accra	WMD	81
Total		All	234

Table 6.5 Areas with house-to-house services as at June 1999

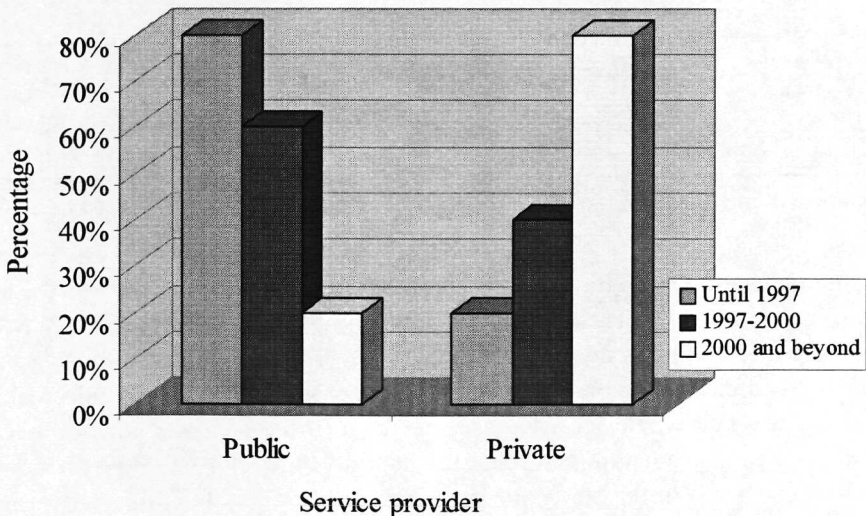
Sub-metropolitan assembly	Location	Service provider
Ayawaso	Abelenkpe, Dzorwulu, Roman Ridge Airport Residential Area, East Legon	Gee Waste
Ablekuma	Dansoman	J. Stanley Owusu
Ashiedu Keteke	None	None
Okaikoi	Tesano-Abeka, Abeka Lapaz, Parts of Achimota, North Kaneshie, Apenkwa, Tesano, Abekah-Lapaz and parts of North Kaneshie	Gee Waste Yafuru Waste Enterprise
Kpeshie	Cantonment, Labone	WMD
Osu Clotley and some parts of Accra	Osu R.E. Part of Adabraka	WMD

6.5.6 Financial arrangements

In both the house-to-house and collective container collection systems, each area (territory) is awarded exclusively to a specific service provider. The AMA normally provides containers for the collective container collection system and the contractor empties them. The local authority bears all the cost for the collective container collection operation. In both the house-to-house and collective container

collection arrangements the service provider is expected to collect and transport the waste to designated disposal sites. In areas where the house-to-house system operates, residents are obliged to register with the AMA's accredited service provider in the area to whom they make their waste available. Consumers for both house-to-house and collective container collection systems provide their own primary waste storage containers. Both public and private modes of house-to-house systems are subject to user fees whilst their collective container collection systems at the moment do not. In the fixing of fees for both public and private modes of house-to-house arrangements, people are not given any choice, not even to take it or leave it. The AMA fixes the fees and subsequently obliges everyone (without exception) to pay through its byelaws. Residents in the area are not at liberty to opt out. Private waste contractors are also obliged by the terms of the payment.

Figure 6.1 Projected shares of public and private providers in SWC in Accra



Payment is the most important factor to the service provider, because it determines whether the service can be sustained. Under the franchised system, each household in the house-to-house-system areas receiving once a week collection, pays between ₵8,000 and ₵10,000 per month per container (depending upon the size of approved waste container) directly⁷⁶ to the respective service providers (*i.e.* the WMD or the

⁷⁶ When the house-to-house collection was operated on a franchised basis – e.g. at the time of this survey – consumers paid the user fees directly to the service provider for the area. Since March 2000, the AMA has collected the user fees for all areas operating the house-to-house system, irrespective of who provides the service.

private contractor). This is normally done at the end of each month unless otherwise determined by the service provider. Households without approved containers pay flat rates. Compound houses pay according to the number of containers they use. Areas or households receiving house-to-house collection twice a week paid slightly more (*i.e.* ₵10,000-₵12,000), based on internal arrangements with the service provider, but this was on a very limited scale. The rate for the once a week house-to-house collection was officially approved, whilst the twice a week rate was not. The private waste contractor in turn pays fees to the AMA for dumping at designated dumping sites. The dumping fee depends on the type of vehicles and not on weight of waste. In 1999, different categories of vehicles (*i.e.* pick-ups, tipper trucks and compaction trucks) attract different rates (Table 6.6). However, private firms that the AMA has contracted in for the collective container collection system do not pay any dumping fees.

Table 6.6 Dumping fees per trip of waste at waste disposal site paid by private contractors for house-to-house collection as at 1999

Type of vehicle	Fees
Pick up	₵ 5,000
Truck	₵18,000
Compaction truck	₵40,000

Sources: Waste Manage Department of the Accra Metropolitan Assembly 1998

Both public and private service providers record the number of trips of waste they send to disposal sites. These forms are counter-signed by officers of the WMD stationed at the dumping sites, as well as by the sub-metropolitan cleansing officer. This person checks the performance of service providers who operate within his area of jurisdiction. Besides, the assemblyman in the area also has to check and certify (with his signature and remarks) that the contractor has performed his service as expected. In the collective container collection system, this certification is even more important, since such authentication is needed by the WMD to pay the contractors for their services.

The records of number of trips private waste contractors make to the dumping sites serve at least two important purposes. In the house-to-house system, they are the basis for payment of dumping fee by the contractor to the AMA. In the collective container collection system, the AMA uses it to pay the private waste contractors. The AMA pays private contractors ₵45,000 (US\$14)⁷⁷ respectively to lift 4.5 ton-

⁷⁷ By mid 1999, the exchange rate was US\$ 1 = ₵2400. In the beginning of the year 2000, and at an exchange rate of US\$ 1 = ₵4000. By December 2000, it was ₵7,000,000.

nes of waste of the collective container collection system to disposal sites. Service providers are required to have offices where residents can lodge their complaints on services delivery, etc.

6.6 Conclusions

Waste management, like other services such as water supply and sanitation, is of critical importance in human settlements. Poor solid waste collection practices severely affect the quality of life of its inhabitants. Solid waste disposal becomes an increasing problem for cities, where households have fewer possibilities for informal recycling or disposal. At household level, waste is all material left over from consumption, which may be recycled or may be disposed of off-site. At the public level, waste is the material that leaves the household, which has to be disposed of either formally or informally. There is very scant information and often-unreliable data about the quantity of waste produced and collected on a daily basis in Accra. Besides discrepancies over the population figures, the AMA does not keep proper records on waste collection. This seriously affects plans to address the problem. This does not, however, suggest that mere knowledge of the amount of waste generated could have solved the problem since other factors also play significant roles.

Accra, like many similar cities in sub-Saharan Africa, is still struggling with how to enforce simple byelaws or provide basic services normally called the "brown agenda", which are taken for granted in developed countries. Various studies, including this one, show that institutional weakness, inadequate financing, poor cost-recovery measures and lack of clearly defined roles for agencies in charge of solid waste management seriously hamper solid waste collection. These, together with poor waste management practices, poor coordination, regulatory, supervision, monitoring and evaluation processes and enforcement capacities, and the behaviour of bureaucrats in the face of few incentives, largely explain the inadequate performance of the solid waste collection systems in place in Accra to date. Addressing these inadequacies requires the formulation and adoption of a consistent waste collection policy and the introduction of requisite systems tailored to the needs of different localities. This also calls for efficient and achievable institutional arrangements for collecting household solid waste.

