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Publication date
2003

[Link to publication](#)

Citation for published version (APA):

Obirih-Opareh, N. (2003). *Solid waste collection in Accra: The impact of decentralisation and privatisation on the practice and performance of service delivery*. [Thesis, fully internal, Universiteit van Amsterdam]. Universiteit van Amsterdam/AGIDS.

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8 Performance Assessment of Institutional Arrangements in Solid Waste Collection in Accra⁸⁵

The system of solid waste collection in Accra has undergone a fundamental change from public to private provision since 1997, despite inconsistencies in government policies. The transition was motivated by the apparent incapacity of the city's Waste Management Department (WMD) to deal with the mounting problems of waste collection, as well as by the prevailing belief that the market would help to overcome these. The indigenous private sector was called upon to improve service performance. Until mid 1999, public and private modes of solid waste collection co-existed enabling a systematic comparison between them. This chapter assesses the performance of various institutional arrangements in household solid waste collection in Accra from the perspective of not only economic efficiency or service effectiveness, but also from a wider sustainable development perspective. The functioning of the various modes of solid waste collection is assessed using an adapted version of a framework developed by Baud *et al.* (2000) including both socio-economic and environmental aspects.

8.1 Motivating the choice for sustainable development assessment

In the literature, various attempts have been made to assess the performance of public versus private modes of solid waste collection. In assessing the impact of new modes of service delivery, the emphasis is usually on service efficiency and effectiveness. The former is largely economic (*i.e.* financial viability), generating higher output from a given input of resources and leading to cost saving, while the latter is concerned with quality and accessibility (in the case of solid waste collection indicated by such aspects as reliability, frequency, type of collection and spatial coverage) stemming from the desire to improve the overall public health situation. Batley (1996: 743) further distinguishes between productive efficiency, which refers to the operational performance of the service provider (measured by such things as labour productivity and costs per tonne) and allocative efficiency, the extent to which charges cover the cost of the service. Studies on privatised collection

⁸⁵ Most of the ideas in this chapter have also appeared in a journal article as Obirih-Opareh N. and Post J. (2001), Quality assessment of public and private modes of solid waste collection in Accra, Ghana. *Habitat International* 26(2002): 95-112. Elsevier Science, Pergamon.

often arrive at the conclusion that privatised services are delivered more efficiently than those delivered by municipal departments, but tend to ignore the additional costs incurred by the authorities for contract management and performance monitoring (transaction costs). Very often privatisation is also associated with gains in effectiveness. Although such progress should certainly be attributed partially to the private sector as such, much depends on the ability of local authorities to create a competitive environment with sufficient incentives to extend services to poorer neighbourhoods (Batley, 1996). It is remarkable to notice that little attention has been paid to the impacts of privatisation on the labour conditions of people working in the sector and that ecological considerations have been virtually absent in the evaluations.

Baud and Post (2001), however, have attempted to design an assessment system that reflects a wider concern for (urban) sustainable development. They include socio-economic aspirations, considerations of environmental health, and the concern of ecological sustainability. In view of the specificity of each public service they argue that indicators should be selected to suit the peculiarities of the sector concerned. Solid waste management, for example, is a typical "brown agenda" issue and its impacts are largely, albeit not exclusively, local. This is reflected in a focus on local impacts.

Table 8.1 Assessment scheme for institutional arrangements in solid waste collection

Dimension	Aspect
Socio-economic viability	1 Financial viability of the institutional arrangement
	2 The quality of collection services under the institutional arrangement in terms of frequency and costs
	3 Employment and labour conditions within the institutional arrangement
	4 Legal and social legitimacy of the institutional arrangement.
Environmental impact	5 Prevention of illegal dumping and unhealthy practices within the institutional arrangement
	6 Controlled final disposal of collected waste within the institutional arrangement
	7 Contribution of the institutional arrangement to waste minimisation, recycling and reuse
System concerns	8 Relative importance of and changes in the importance of the various institutional arrangements
	9 Financial viability of the entire solid waste collection system
	10 Effectiveness of performance monitoring of the institutional arrangements

Very often, writers use mainly quantitative indicators to assess performance, probably because they suggest some sort of objectivity. However, not all aspects of the system are easily quantifiable (for instance the impact on human health). Further-

more, the appreciation of a system or an arrangement is also partly a subjective matter. This study on institutional arrangements in solid waste collection in Accra deals with stakeholders' perceptions. In Chapter 7, for example, we tried to find out how consumers perceive the quality of the solid waste collection service in their area, what kind of problems they experience and what they think should be done to improve the situation. Such information is helpful in identifying the strength and weakness of prevailing institutional arrangements. In this way, this study uses both quantitative and qualitative data in an attempt to provide a holistic picture on the performance of various institutional arrangements in solid waste collection in Accra. The aim is to see to what extent they contribute to sustainable development. However, it would be wrong to suggest that this qualifies as a comprehensive and exhausting sustainable development assessment, especially while we did not investigate the impact of collection practices on the quality of the natural environment.⁸⁶ On the basis of these studies we have selected a 10-point assessment scheme (Table 8.1) on the basis of which we assess the performance of solid waste collection in Accra in this chapter.

8.2 The financial viability of the institutional arrangement

An institutional arrangement may be called financially viable if it can sustain itself. Financial viability in this study is assessed at three levels: (i) mode of disposal (*i.e.* house-to-house versus collective container collection); (ii) the type of provider (public versus private); and (iii) the entire solid waste management system or parts of it (see financial viability of the solid waste collection system in Section 8.10). Unfortunately, it is impossible to carry out the required cost-benefit analysis that would allow the drawing of firm conclusions in this respect. The providers are unwilling to disclose the data and the WMD does not really work like a genuine business unit. Whilst the operational costs of WMD are covered by the assembly's general revenues, central government grants or donor funding usually cover the investments. Nevertheless, a few observations can be made. First of all, as the collective container collection system does not at the moment attract user fees, all the costs must be borne by the AMA. Therefore, all institutional arrangements using this system are, strictly speaking, not viable and only survive because of the public good nature of solid waste collection. Secondly, the AMA pays the collective con-

⁸⁶ Obviously some aspects that would be essential in assessing the contribution of solid waste management practices to sustainable development are not included because the institutional arrangements in collection do not have any bearing on them (*c.f.* cleaner production methods to reduce waste volumes or the method of final disposal). Also environmental impact can be assessed from different points of views. The soil scientist may test soil samples to assess their damage, level of contamination, etc., whilst the health statistician may use statistical data from the hospitals (Ministry of Health) to show whether there is a relationship between causes of, for example, high incidence of malaria and waste management practices. The social scientist on the other hand may assess the environmental impact in terms of labour productivity, quality of life or perceptions.

tainer collection contractors on the basis of recorded trips of waste to the disposal sites using a form that has to be signed by the sub-metropolitan cleansing officer and the WMD officer at the dumping site. In addition, the assemblyman in the area also has to check and certify that the contractor has performed his service to satisfaction. In the collective container collection system this certification is of vital importance since authentication is required by the WMD to pay the contractors. However, if the private provider works up to standard, the collective container collection system is sufficiently rewarding to them to keep them in business. All the interviewed providers were keen to continue their collective container collection services.

Going to the dumping site is essential for the private collective container collection operators because their payment depends on it. For the house-to-house contractors, recording the number of trips to the dumping site could serve to deter them from sending waste there in order to escape payment of dumping fees. Some private contractors dump waste at illegal sites at odd times. Residents at Teshie-Nungua Estates and particularly those in Grader Estates, for example, have on numerous occasions complained about the dumping of waste by Daben Cleansing near unauthorised places, including residential accommodation. The residents in these areas have on several occasions held street demonstrations to register their protest on the behaviour of Daben Cleansing Limited, which collects waste in the area. Such waste dumping practices pose serious environmental health hazards to residents.

The most important financial problem encountered in the privatised collective container collection service was tardy payment by the AMA-WMD of their invoices, which led to the occasional interruption of the services. Thirdly, the financial viability of the arrangements based on house-to-house collection is considerably better than that of the collective container collection system. In 1999, the services generated revenues of between ₵8,000 and ₵10,000 per month per bin (depending on the size of the approved bins, but regardless of the technology used). Although the fees are said to cover only the costs of haulage and dumping (excluding costs for acquisition, developing and maintaining the dump sites and the transaction costs related to contract management and performance monitoring), they do provide the WMD with working capital. Private operators involved in house-to-house collection used to work (until mid 1999 when CCW took over) on a franchised basis and collected the user fees themselves. They were very successful in both high and middle-income areas, managing to recover more than 95% of the fees (the only problem being some delay in payment). This corresponds with the results of an earlier study by Schweizer and Annoh (1996: 48) who found that default rates were only about 10% for privatised house-to-house services. The same cannot be said about the performance of publicly

provided house-to-house waste collection. Here defaulting is as high as 30-40% (Schweizer and Annoh (1996: 48) report 30%).

Whilst the private sector employs all means possible to collect their fees, since payment of their wages and salaries depends on it, public sector agencies do not. Part of the explanation for this free rider problem is that government officials living in government houses do not pay the fees themselves, but through their departments, and these agencies are notorious defaulters. In other words, allocative efficiency is substantially better if local contractors provide the house-to-house service. However, the franchising system was abolished with the arrival of CCW and contractors ceased to collect fees. Unfortunately, it proved impossible to obtain reliable data on the productive efficiency of public and private solid waste collection. However, it is possible to provide a number of arguments that attest to the efficiency gains of privatisation. First of all, all the private contractors involved in solid waste collection demonstrated a strong preference for staying in business (rather than to move to another line of work), underscoring the viability of their activities. The private contractors have lower overall wage bills than the government (see below). In other words, the private contractors are more productive and efficient. Their positive disposition, however, should be put in a proper perspective as it partly depends on the use of very old equipment (saving on costs of depreciation) and on economising on labour costs (see below). Ensuring profitability of house-to-house solid waste collection seems to be most difficult in the less affluent and more densely populated areas where the costs of service provision are relatively high (both garbage collection and fee collection are more time consuming). It seemed that the more established enterprises were reluctant to provide house-to-house services in middle-income areas at the official AMA rate, leaving this less attractive niche to companies that are willing and able to operate at a bare minimum. Finally, private waste collection firms are under great pressure to perform. In the collective container collection system, contractors are paid for each recorded trip of waste to the designated dumpsites and in the house-to-house system the willingness of residents to pay their dues depends on whether they receive value-for-money. Such direct financial incentives are absent in WMD operations.

The level of productive efficiency has fallen drastically since mid July 1999, when CCW took over solid waste management in Accra. The Canadian company is paid the cedi-equivalent of US\$ 30.28 (at a fixed cedi-dollar exchange rate of $\text{¢}7,000$ this is $\text{¢}211,960$) for each tonne it brings to the disposal site either by its own vehicles or those of local contractors. Although this is an all-in rate, it contrasts sharply with the $\text{¢}10,000$ per tonne paid until recently (1999) to the indigenous contractors for lifting and hauling waste containers in the collective container collection sys-

tem.⁸⁷ CCW called upon the private local contractors to work as its sub-contractors. Several companies operating house-to-house services complained that the fee they received was less than what they generated themselves under the franchise arrangement. Gee Waste, for example, was forced to lay off some of its workers for that reason. There was a general fear among the local collection companies that they would gradually be phased out. All the indigenous solid waste collection firms were distinct in their disapproval of the system that degrades them to the status of sub-contractors at the mercy of CCW. In July 2001, the CCW contract agreement was abrogated paving the way for private local contractors to provide the service at US\$10.00 per tonne of waste collected and sent to disposal site.

8.3 The quality of the collection service

The quality of the collection service was tested by looking at the actual frequency of collection and the cleanliness of the service. The officially stipulated frequency is once a day for the collective container collection service and once a week for house-to-house collection (which is generally considered to be too low under wet tropical climate conditions (Cointreau-Levine, 1994). Dissatisfaction about the frequency of services was the most important problem identified by the residents (62% mentioned it as their major objection). In the collective container collection system the major reason for this is irregularity of services leading to waste piling up at the container sites. There is a significant difference between collective container collection performances under public and private provision. Local contractors generally provide better services, probably because they are being paid according to the number of containers they actually transport to disposal sites. This incentive is lacking in WMD operations. Furthermore, the WMD, having overall responsibility for solid waste collection, had to allocate its limited vehicle fleet on the basis of 'shared suffering' and, therefore, could not guarantee regular hauling. When CCW took over from WMD, however, the situation improved considerably in areas such as Nima, with a high population density and a limited number of containers and container sites, receiving regular waste collections twice a day. In the case of house-to-house services, the appreciation of frequency is highest in the Cantonments and Airport Residential Area. These areas receive a twice a week service, which is probably related to the fact that they are the wealthiest areas in Accra and house prominent government officials, top foreign dignitaries and high-level businessmen. Residents are able to ensure prompt and regular servicing, by practices such as tipping waste collection workers.

⁸⁷ Following persistent criticism by the public and pressures from private contractors, the AMA reduced the amount from US\$ 30.28 to US\$ 20.14 per tonne, while CCW agreed to pay the private contractors US\$ 5.20 per tonne.

Appreciation of the cleanliness of services (the degree of littering) is considerably lower in the collective container collection system compared to the house-to-house system. In theory, the latter ensures the effective removal of waste from premises, whereas the collective container collection service – especially in case services are unreliable and/or container sites far removed from houses – incites people to dump indiscriminately. Contrary to expectations, the satisfaction with cleanliness was slightly (yet significantly) higher in the case of publicly rather than in privately run services. This seems to be related to the type of equipment being used. The WMD is comparatively better equipped than its local private counterparts because they receive financial and logistical support from the government and foreign donors, whereas the latter often utilise old, dilapidated vehicles (usually open trucks) and equipment.

8.4 Employment and labour conditions

The retrenchment of public sector workers in the 1986-1992 period seriously affected the WMD service performance. Considering the virtual ban on labour recruitment in the public sector, privatisation was the only available avenue to increase the labour input in solid waste collection. Privatisation has indeed created additional employment opportunities in the sector (a couple of hundred extra jobs throughout the city), especially while most privately run schemes have adopted labour-intensive technologies. The workers have been recruited from among former government employees and the city's unemployed. Apparently, a large number of migrant workers come from the Northern part of the country.

Working conditions for all those working in solid waste collection are rather unattractive. They have to work under unhygienic conditions and for low wages. Although protective clothing (*e.g.* gloves and boots) is supposed to be provided it is, in actual fact, seldom worn by workers. When comparing employers, it appeared that remuneration levels for various categories of workers are pretty much the same between the indigenous private sector, WMD (until 1999) and CCW (since 1999) and correspond to the wage levels set by the government. However, fringe benefits for government workers and those with CCW (that absorbed most of the WMD executive personnel), including allowances for housing, transportation, risk and hazards and full medical care for the worker and his/her family, are substantially better than in the local private sector producing a net difference of 20-30%. In addition, employees in the private sector are usually not reimbursed for hospital and medical expenses, do not have clear employment contracts, and are frequently troubled by the irregularity of payments. Because these workers are not organised, their bargaining power is very weak. This helps to explain why labour turnover in the indigenous private sector is very high.

8.5 Legal and social legitimacy

Issues of public interest and acceptability are at stake in solid waste collection. As Rondinelli and Iacono (1996) and Burgess *et al.* (1997) pointed out, private sector involvement in service provision raises issues of public interest and acceptability. Therefore, the question of whether an institutional arrangement is legitimate in the eyes of the law as well as the general public is justified. Law supports all four basic arrangements. Even though the inclusion of waste pickers in solid waste collection in Adabraka is not officially recognised, the authorities condone it. However, social legitimacy – public acceptance – of the arrangements differs. There is a general dislike of the current collective container collection system largely because of the low incidence of container sites and irregular collection. At the same time, the residents in low and low to middle-income areas acknowledge almost unanimously (94%) that they cannot afford current rates of servicing in the house-to-house system. In other words, upgrading to house-to-house collection would meet with considerable public resistance in these areas. For an improved collective container collection system, however, most residents seem to be willing to pay ₵100 per day (in 1999 prices) without jeopardising their acceptance and participation.

An overwhelming majority of consumers in all localities prefer private service providers to the WMD. The dissatisfaction about past governance performance translates into a strong pro-privatisation attitude. This is somewhat remarkable considering the fact that most respondents simultaneously believe that privatisation will lead to price increases. Apparently there is a strong public desire to have better services and the private sector's potential to deliver these is taken for granted. Nevertheless, residents feel the AMA should remain in charge of setting and regulating user fees in order to avoid overpricing by profit-seeking entrepreneurs.

Public outcry⁸⁸ at the City and Country Waste's contract provides an excellent illustration of legal and social legitimacy of institutional arrangements. Though it is legal, it lacked social legitimacy. There seems to be neither justice nor the requisite transparency in award and implementation of contracts in solid waste collection. Insofar as these arrangements are deficient in this respect, they might lack the requisite moral authority and support from the population.

⁸⁸ Opinion was sharply divided on the CCW contract. Some law-makers (parliamentarians) took the government and the local authority to court for breach of Ghana's 1992 Constitution because the government did not seek approval of parliament of the Canadian loan and its subsequent use to procure equipment for CCW.

8.6 Prevention of illegal dumping and unhygienic practice

Illegal and unhygienic waste practices constitute a threat to public health and the environment. These substandard waste management practices are the result of a number of factors. As we discussed earlier on, the collective container collection system is most likely to generate environmentally unsound practices within the areas concerned. The inadequacy of collection points and containers, irregularity of collection and the distance people have to travel to dispose of their waste, encourage illegal dumping. This is a source of environmental degradation and a public health hazard, especially for children, since dumpsites frequently serve as playgrounds. Disposal sites are known to be health hazards themselves due to crude dumping practices without prior treatment of the waste. Children, who may not be bothered very much by environmental concerns, often carry waste to disposal sites. Uncertainty about responsibilities for cleaning collection points is another problem the system faces. Both the WMD truck drivers and those working for private contractors just lift the containers, without cleaning litter and spillage. Absence of site supervision is also a key reason why solid and liquid waste often gets mixed up in and around containers, threatening the health of both visitors and collection workers. Occasionally, assemblers (e.g. in Kaneshie and Akweteman/Achimota) took the initiative of hiring attendants for site supervision and cleansing work and require residents to pay a fee of ₵100 per dump to pay for this communal service. In 2000, CCW put its own attendants at every collective container collection point to maintain and clean the area without collecting any dumping fee from users. The idea is that residents will be charged for the collective container collection service and, eventually, that AMA will collect rates from the households. So far, however, this cost recovery instrument for the collective container collection system has not been put into practice.

Low frequency and irregularity of solid waste collection also have a detrimental impact on public health and the quality of the environment. In areas using the collective container collection system primary storage is usually through polythene bags, carton boxes, buckets etc. This type of provisional storage results in more littering and less hygiene than when approved plastic bins are used. However, poor people are not ready to spend money on storage containers. In the house-to-house system people usually do have appropriate containers. However, if the frequency of collection is only once a week, waste will decompose leading to stench. An accumulation of decaying waste also provides a breeding ground for insects and vermin that may spread diseases. As collection workers scarcely use protective clothing and gloves, their bodies are highly exposed to health risks. Poor public health inspection and a lack of sanctioning against sanitary offenders are additional reasons for these negative environmental impacts.

8.7 Environmentally sound transportation and disposal

Though Ghana has placed a ban on the importation of vehicles over seven years, there is no restriction on using old vehicles inside the country. Most local contractors engaged in solid waste collection can only survive the low tariffs set by the AMA by using over-aged, second-hand vehicles which usually are a serious source of air pollution. Furthermore, contractors predominantly use open trucks. Though they are expected to cover the waste with nets in order to prevent littering during transportation, this requirement is largely ignored.

All collection vehicles are required to dispose of their loads at official disposal sites. The publicly run services (WMD) dump only at official disposal sites. In fact there is no reason for WMD workers to evade this requirement. As mentioned before, contractors involved in collective container collection handling have a good reason to abide by the rules since their payment depends on the number of full containers they register at the dump. However, some contractors and/or drivers active in house-to-house collection avoid going to the dump and paying dumping fees to the AMA. As said before, residents at Teshie-Nungua Estates and particularly those in Grader Estate, for example, have on numerous occasions complained about a private contractor unloading its vehicles at unauthorised places. In such instances private gain ends up as public loss. However, it also points to the weakness of public monitoring and sanctioning by the WMD, which should have prevented such practices from occurring in the first place.

8.8 Waste minimisation, recycling and reuse

The system of household solid waste collection in Accra as such does not encourage people to engage in source separation, which is at the core of attempts to reduce waste flows going to the dump. All the arrangements are based on the collection of mixed wastes. In the poorer communities of Accra it is common practice to use organic waste (food leftovers) to feed domestic livestock and some people even sell organic waste to livestock owners. However, in Accra, contrary to many other poor cities across the world, there is no substantial group of waste pickers who collect and sort household waste on behalf of merchants, recycling firms or composting units. Separation at the source is therefore largely confined to those items that people can either use themselves or give to their neighbours (and, in fact, cannot be regarded as waste). Source separation by large numbers of households is an essential contribution to the goals of waste minimisation and increased reuse and recycling. It is also remarkable to note the gradual development of indigenous recycling industries in a number of waste products, particularly, iron, aluminium, polythene/plastics and paper, though these are on a small scale.

Composting is another useful way of reducing waste. However, the existing composting plant for Accra, which is located at Teshie-Nungua, either operates far below

its capacity when functioning, or produces no compost at all most of the time. It is therefore neither able to reduce the volume of waste appreciably nor maximise the use of waste as a resource. It is important to note, however, that minimisation and maximisation of waste do not depend on the institutional arrangements. They relate to people's waste practices. Also, the privatisation policy has had no effect yet on the minimisation of waste generation and maximisation of its reuse and recycling.

8.9 The relative importance of various institutional arrangements and changes therein

Prior to the privatisation of solid waste collection, the WMD was virtually the sole service provider – except for a number of semi-public institutions having their own provisions such as the police, army and University of Ghana (Legon) and some informal private waste collectors. It is said to have collected 60% of the city's waste on a regular basis. Since the private sector became involved, the share of the WMD witnessed a tremendous decline. According to 'unofficial' (not published) data provided by the AMA Head Office, the share of WMD in waste collection was only 34% in 1998 and dropped to an average of 18% in 1999. The CCW had taken over completely by the end of 1999. Nevertheless, appreciable improvement in solid waste collection has been observed since the private sector stepped in in 1997. First, privatisation has helped to increase the scope of operation, particularly to include some areas that were previously not served. Accra is expanding at a fantastic rate. As new residential areas spring up, the demand for waste collection services and pressure on existing capacities for waste collection increase accordingly. Generally, waste collection services are now provided to all parts of the Accra metropolitan area, even though some areas still receive irregular and poor services. It is only in newly developing areas at the periphery of the city that no services are provided at all. In actual fact, these areas are outside the jurisdiction of the AMA since they fall under other districts, though they are physically joined to the city of Accra.

Secondly, there have been intra-arrangement changes in terms of mode of disposal. Some areas, such as Abekah-Lapaz, which were previously serviced through the collective container collection system, are now being serviced through house-to-house collection. Before 1997, very few areas (perhaps only the rich areas) were serviced through house-to-house collection. Virtually all the middle-income areas were serviced through collective container collection. Now, some of these areas have switched to house-to-house collection.

The third phenomenon is intra-arrangement changes in terms of type of provider. Since the introduction of the privatisation policy, many areas which were previously serviced by public arrangements are now privately run. These changes in-

clude both house-to-house and collective container collection. This means that the most effective means of waste collection in the metropolis is through privately run services, though these leave a lot to be desired in terms of cleanliness, labour conditions and pollution. Therefore, the most obvious approach to contributing to sustainability is by turning to the private operator.

An appreciable improvement⁸⁹ in solid waste collection has been observed since the privatisation policy in 1997, both in terms of area coverage and volumes of waste collected. Some private companies such as Gee Waste brought in their own communal containers to beef up those provided by the WMD. Furthermore, a number of residential areas that were previously not served or were under-served have been put under private provision (among others, the newly developing first and second class high-income residential areas⁹⁰ at Batsona, East Airport Area, estate houses by Regimanuel, Manet, Koomson, NTHC, Hydrafoam, etc. that have sprung up along the Spintex-Tema road since the late 1990s), while services in some middle-income areas have been upgraded from collective container collection to house-to-house collection. According to figures provided by a German Technical Officer at the AMA, the overall annual collection performance went up from 639,000 cubic metres in 1998 to 753,000 cubic metres in 1999 of which about 70% of the total amount of waste was collected by private service providers by the end of 1998.⁹¹

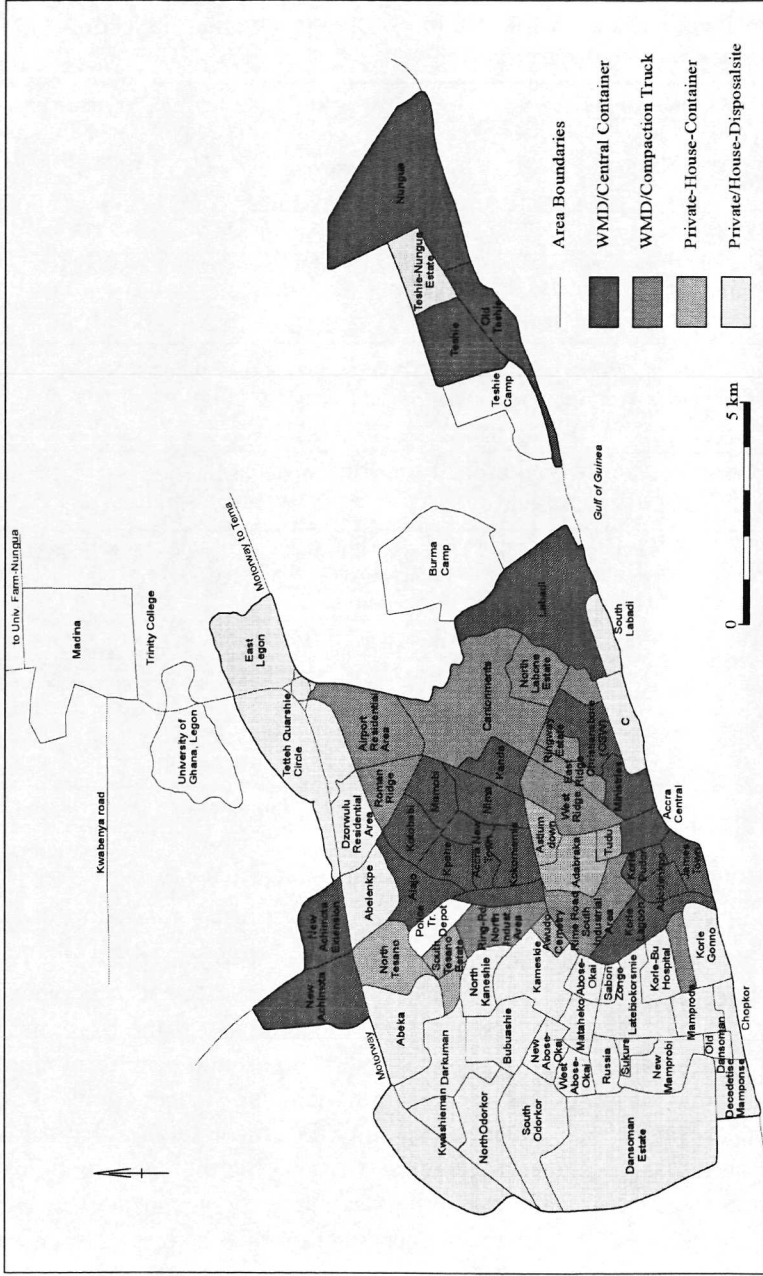
Map 8.1 shows the geographical distribution of the major modes of collection in 1998. At face value, the overall waste collection performance seems to have improved further since CCW entered the scene as one may expect, considering the huge rise in costs and logistics put at its disposal and its very lucrative contract. However, since the CCW is obliged to operate on roads accessible to the company's vehicles under normal conditions only, many outlying and poorly accessible areas continue to remain outside the service.

⁸⁹ The improvement is both quantitative (in terms of increase in area coverage in waste collection: more areas have been brought under coverage and the familiar mountains of uncollected garbage in most areas have disappeared, even though occasionally one could see full containers not emptied for more than a day) and qualitative (in terms of cleanliness and frequency of waste collection, increased numbers of containers and collection points and sites, and increase in areas receiving house-to-house services).

⁹⁰ These areas are serviced through house-to-house collection and are serviced by private waste contractors.

⁹¹ In early 1999 private performance (of the indigenous companies) witnessed a decline, which was due to tardy payment by the AMA and low tariffs to service providers. However, monthly waste collection figures by the end of 1999 (under CCW responsibility) peaked at twice the volumes collected by the private sector during the last months of the previous year (before the short-lived downfall set in).

Map 8.1 Area coverage of public and private modes of solid waste collection in Accra (1998)



Note: In some areas that have been designated for collective container collection, small sections are serviced through a house-to-house system, such as parts of South Odokor, Dansoman Estate, Laterbiokorshie and Mamprobi.

Table 8.2a Income and expenditure of solid waste collection in Accra Metropolitan Assembly

Year	Total income (mn. cedis)			Total expenses (mn. cedis)			Variance (Inc- Exp) (mn. cedis)	Expenses of solid waste collection %
	AMA	SWC (revenue)	SWC % of AMA's revenue	AMA	SWC (expenditure)	SWC % of AMA's expenses		
1995	8,778.30	494.1	5.60	7,882.23	1,266.60	16.07	-772.5	156.30
1996	14,974.85	492.8	3.20	13,378.66	1,524.80	11.40	-1,032.00	209.40
1997	16,707.03	749.1	4.48	16,469.70	2,070.00	12.57	-1,320.90	176.30
1998	29,614.98	949.0	3.20	27,352.83	2,242.70	8.20	-1,293.70	136.30

Source: Based on data from the AMA and Local Government Finances Section of the Controller and Accountant General, Ghana, December 2000

Table 8.2b Income and expenditure for solid waste collection services in Accra Metropolitan Assembly

Year	Total income for solid waste collection	Total expenditure for solid waste collection	Deficit (exp-rev)	Deficit (%) (exp-rev)/exp
	(mn. cedis)	(mn. cedis)	(mn. cedis)	%
1995	494.1	1,266.60	-772.50	156.30
1996	492.8	1,524.80	-1,032.00	209.40
1997	749.1	2,070.00	-1,320.90	176.30
1998	949.0	2,242.70	-1,293.70	136.30

Source: Based on data from the Treasury Department of the AMA

8.10 Financial viability of the solid waste collection system

The viability of a system is the ability to sustain itself. Viability should also be seen in the longer term and that this is one of the problems as entrepreneurs are not always/automatically making provisions for future investments in vehicles and equipment. Depreciation very often is not accounted for in the (informal) book-keeping of many small enterprises. So the fact that cost and benefits are in balance in the short-term does not guarantee long-term viability. The continuity of an activity ultimately depends on its financial viability, i.e., the assurance that the revenue will continue to balance the costs incurred. Considering the public good nature of solid waste management, authorities often have to accept a considerable degree of subsidization. However, the financial sustainability of the system depends on the authorities' solvability (through own revenues or grants) and the political willing-

ness to pay to pay the price of adequate servicing. The viability of the totality⁹² of institutional arrangements in solid waste collection in Accra depends on the sustainability of their financing. The AMA has seen its spending on waste management (which is more than collection) increase from ₵1,267 million in 1995 to ₵2,243 million in 1998, while income (largely from publicly provided house-to-house services) rose from ₵494 million to ₵949 million in the same period (see Table 8.2a and 8.2b). The net deficit went up by 40% and constitutes over 10% of the revenue mobilised by the AMA itself in 1998 (e.g. disregarding contributions from the District Assembly Common Fund and Ceded Revenue).

Figure 8.1 Deficit in financing solid waste collection

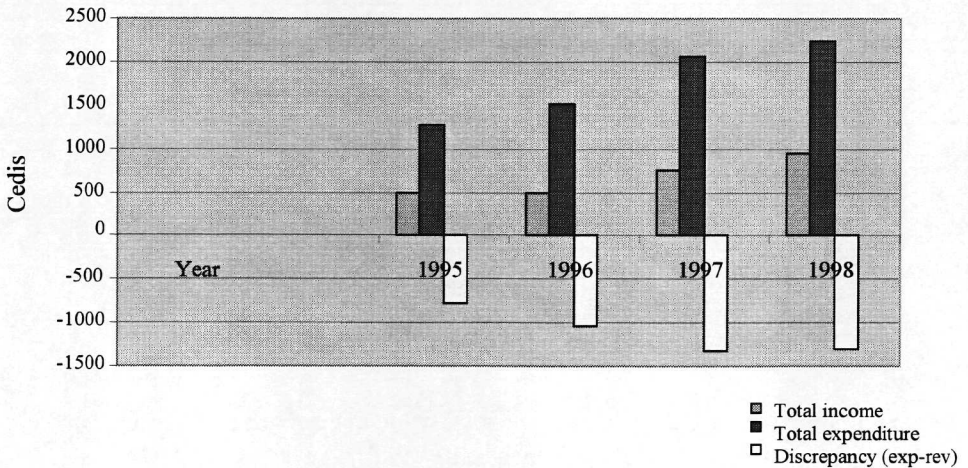


Figure 8.1 illustrates the magnitude of deficit financing by the local authority if it was to rely solely on revenue it derives from the house-to-house collection. The difficulties arising from this mounting deficit are apparent in the inability of the AMA to pay local contractors which it owed ₵800 million by July 1999 as unpaid services in the collective container collection system for eight months. Despite the progress made in service performance through privatisation, the constrained finan-

⁹² The total cost of solid waste collection system is not only the amount used by the local authority in secondary collection (i.e. after the waste leaves the household and becomes a public problem), but also all the overhead costs of the public sector related to solid waste collection, environmental health inspection and education. In addition, there are costs incurred by households for primary collection and storage. Furthermore, in areas with poor and unreliable service provision, households rely on other means including using waste pickers, otherwise called “Kaya boila” to collect their waste for a fee to the nearest collection points. It is doubtful if anybody has accurate figures of the total costs involved with solid waste collection in Accra

cial capacity of the local government did not enable it to push it much further, at least without serious efforts to increase cost recovery.

Table 8.3 Revenue mobilisation of Accra Metropolitan Area

Year	Total revenue	Government grants			Own revenue = Total revenue - total grant
		Ceded revenue	District Assem- bly Common Fund*	Total grants	
	(A) ¢ mn.	(B) ¢ mn.	(C) ¢ mn.	(D) = (B+C) ¢ mn.	(A-D) ¢ mn.
1995	5,666	80	930	1,010	4,656
1996	10,111	66	4,162	4,228	5,883
1997	9,243	341	4,702	5,043	4,200
1998	12,500	0	4,427	4,427	8,073
1999	13,100	223	4,357	4,580	8,520
2000	14,000**	0	3,339***	3,339	10,661
Grand total	64,620	710	21,917	22,627	41,993

Note: ** = As at 30 November 2000;

*** = As at November 2000, but includes only the 4th quarter of 1999 and two quarters of 2000. The remaining releases for two quarters *i.e.* the 3rd and 4th quarters were not released at the close of the year. From 1996 to 2000, the AMA received €4 billion a year, on average, from DACF. From 1996 to 2000, Accra received €4 billion a year, on average, from DACF, whilst receipts from ceded revenue has been unstable during the same period.

Source: Based on data from the AMA and the Local Government Finances Section of the Controller and Accountant General, Ghana, December 2000.

With the arrival of CCW, the costs of solid waste management skyrocketed and moved even further beyond local government affordability. Whereas the AMA collected €13 billion from its own revenue sources in 1999 (see Table 8.3) the contract agreement awards CCW with €22.5 billion per year (1999 prices; the contract stipulates that CCW receives the cedis equivalent of the cost of the service, *e.g.* corrected for inflation⁹³).

⁹³ In December 2000, the CCW claimed it was collecting a minimum of 1,150 tons of waste per day in Accra. If the AMA paid it US\$ 30.28 per ton at a fixed exchange rate of €7,000 per US\$ 1, then the total daily waste bill would be 1,150 tons x US\$ 30.28 x €7000 = €243,754,000. This works out at €7,312,620,000 per month and €87,751,440,000 per year. But if we multiply the daily waste bill by 365 days (*i.e.* 243,754,000 x 365) this gives €88,970,210,000. This is perhaps why the then ruling government did not argue against the charge that it was paying a whopping €22.5 billion to CCW per year. In actual fact, this was just a small fraction – about a quarter of the actual figure. This was confirmed in December 2000, when a top official at the finance department of the AMA told this researcher that he did not know how people came up with the figure €22.5 billion a year for CCW, because the minimum figure is at least about four times higher (*i.e.* 4 x €22.5 billion). The secrecy of the contract agreement is to blame for the discrepancies.

The idea is that a substantial part of the cost will be recovered through user charges. However, as the franchise system was abandoned and local firms (with some exceptions) had to continue as sub-contractors they also ceased to collect user fees. Therefore, an important source of revenue dried up, at least in the short term. Partly in recognition of the AMA's inability to pay CCW, and also to support the sanitation requirements of other cities, the Cabinet decided to provide national budgetary support through its National Environmental Sanitation Policy (Ahwoi, 1999). Nevertheless, great pressure will be brought to bear on local authorities to deliver their share of the burden, possibly at the expense of other public services. Meanwhile in 2000, the AMA proposed collecting a revenue of ₵70 billion from new rates for solid waste collection services to finance its solid waste collection operations. It took the initiative to increase cost recovery. It divided Accra into four classes of residential areas based on their level of development. In April 2000, the following rates were approved: ₵40,000 per month in first class areas, ₵25,000 in second-class areas, ₵10,800 in third class districts and a daily rate (yet to be fixed by AMA) for residents in fourth-class areas (see Table 8.4).

Table 8.4 New user fees since April 2000 based upon area classification

Classification	Residential area group	Approved
1 st class	Airport Residential Area, Cantonment, Labone, Dzowulu, Roman Ridge, Abelenkpe, etc.	₵40,000
2 nd class	Kaneshie, Adabraka, Kokomlemle, etc.	₵25,000
3 rd class	Nima, Maamobi, etc.	₵10,800
4 th class	Teshie Old Town, Abbossey Okai, James Town, etc.	Daily rated

Considering the weakness of AMA's own revenue collection capabilities, three private firms were contracted to collect the user fees. This exercise is expected to generate enough money to fulfil the CCW contract. However, it remains to be seen whether this all will really work out as planned. For political reasons, the billing for 2000 solid waste collection services was postponed until after the December 2000 presidential and parliamentary elections. Residents in rich areas have already expressed their dislike of differential rates, which they consider to be forced subsidisation. It is very likely that they will seek to frustrate its implementation. Furthermore, a lack of accurate data on the number of houses will seriously hamper the billing process. It will certainly take many years before this handicap will be overcome. Finally, it is far from certain whether the authorities will succeed in getting residents in poor communities pay for the collective container collection services despite expected gains in performance (*c.f.* bad experiences with the PAYD system).

The viability of the system is also under threat from an entirely different angle. Although solid waste management is a local government responsibility, the current system in Accra has been imposed on it by the central government in direct violation with the principles and provisions of 1993 Local Government Act 462. The increased dependence on central funding will probably lead to a tightening of central control, thus hollowing-out local autonomy – a cardinal principle of the 1988 decentralisation policy. By overruling the AMA and its WMD, the willingness on the part of the administration to provide loyal support to CCW's activities cannot be taken for granted. Furthermore, by giving CCW monopoly rights, a basic principle of privatisation, *i.e.* that of free competition, was violated. As the company took over all responsibilities across the city – whereas the National Environmental Sanitation Policy specifies that local government authorities should at least provide 20% of waste collection services in their areas – there was no opportunity left to monitor the reliability of the costs of service. This gave the company (CCW) virtually a free hand. Finally, as CCW was under no obligation to hire the services of indigenous contractors, the new initiative nearly ended up killing a young and dynamic local private sector that was capable of providing satisfactory services at comparatively low costs. The private contractors were in a wait and see attitude with regard to the future of the CCW contract agreement with AMA.

Despite the increased financial burden, CCW was not able to increase its coverage of collective container collection services appreciably to other places as expected. The much more limited number of communal containers than required is partly to blame. This explains why, for example, CCW was forced to empty the limited number of containers at a collection point at Nima at least twice a day, though the stipulated requirement is once a day. In spite of the CCW contract agreement, which gave it a monopoly status for solid waste collection for the whole of Accra, the AMA called on local private contractors to collect the waste whenever there were serious waste problems in an area. The AMA resorted to this measure partly because of the politically sensitive nature of the CCW agreement and also because Accra is the national capital. The AMA also contracted private firms – to which it refers as 'Routine Maintenance Contractors' – to sweep and clean 'ceremonial streets' and gutters and to handpick polythene bags. Another serious concern is the durability of the solid waste collection arrangement when the five-year CCW contract agreement comes to an end and how to replace the vehicles and equipment. By the end of 2000, about a third of the fleet of vehicles acquired for CCW was broken down and off the road, without CCW making any serious efforts to replace them or put them back on the road. What would have happened if this trend were allowed to continue? It is therefore not surprising that the agreement was abrogated to ensure system sustainability.

Yet another factor, though not directly connected to the institutional arrangements, but nonetheless impeding the billing of user fees to raise money for the operation of solid waste collection and therefore affecting its sustainability, is the lack of accurate data on, and the numbering of, houses and streets. The AMA has embarked upon an exercise to have a databank on all houses and properties in Accra, including their property values to facilitate revenue collection. This would help to improve the revenue base of the assembly to provide better services. In May 2001, the Minister of Local Government and Rural Development has stated that if the AMA can number and value all houses and properties in the city, it might be able to generate between ₵20 and ₵25 billion a year to help run its operation. It would therefore be possible to take Accra off the DACF and give the money to poor district assemblies (DAs) such as Sene, money that otherwise would have gone to Accra (see the Ghanaian Daily Graphic May, 2001).

8.11 The effectiveness of performance monitoring

The official actors in the case of solid waste collection are WMD's cleansing or sanitation officers and the health inspectors of the Environmental Health Department, who are expected to regulate and monitor the quality of service delivery and sanitary conditions respectively, and have to sanction possible offenders. In addition, the consumers themselves (by filing complaints) and their representatives (notably the assemblymen, but in the future probably also the members of the unit committees) have a watchdog function. In actual fact, official monitoring is exceptionally weak due to bad logistics, under-staffing, low remuneration and corruption. The problems are most pronounced in the collective container collection system for its inherent weaknesses. Although sanitary offences by residents in collective container collection areas are rampant, prosecution is more the exception rather than the rule. The situation is comparatively better in the areas serviced through the house-to-house system. Whenever people have to pay for the service, they demand value for money.

When responsibilities for service provision are passed on to the private sector, it becomes even more imperative for the local authorities to ensure that performance standards are upheld. Evidence shows that the local service providers continuously flout contract specifications and/or sanitary bylaws. However, despite an extensive list of complaints – waste collectors not wearing protective clothing, using the same containers to collect solid waste and night soil, failure to cover open containers with nets during transportation, poor record-keeping of complaints, etc. – they are hardly ever sanctioned by the authorities. Although our material does not allow differentiation in terms of complaints and the handling thereof between public and private house-to-house collection systems, the franchise system, in theory, at least,

does offer a clear advantage. Establishing a relationship of direct dependence between the contractor (offering the service and collecting a fee) and the consumer (receiving the service and paying the fee), fosters adequate and reliable servicing. However, these advantages largely pertain to the quality of the service in the narrow sense of the word, for consumers are largely indifferent to the labour conditions inside the firm or its environmental practices.

It is entirely unclear whether the performance of CCW will be adequately monitored. The WMD staff were completely bypassed in the decision-making process leading up to the take-over by CCW and have meanwhile been virtually dismantled. The sub metros lack the capacity⁹⁴ to monitor. Careful supervision, however, is warranted to avoid deterioration of service standards by a monopolistic provider eager to maximise profits.

8.12 Conclusions

Policies of decentralisation and privatisation have completely altered the setting of solid waste collection in the Ghanaian capital. Over the last decade, a multitude of new institutional arrangements in solid waste collection have emerged. Although this chapter has paid ample attention to the public-private distinction, it has to be admitted that the most decisive factor in determining differences in performance is the mode of collection: collective container collection versus house-to-house collection. In the eyes of the residents, the collective container collection system suffers from a number of weaknesses, notably the low frequency and irregularity of container haulage, and the lack of cleanliness. Furthermore, the number of container sites and containers is severely limited and incites people to opt out of the service. Simply addressing these points could improve things considerably, as would increasing the scope of house-to-house servicing, which seems a viable alternative in many middle-income districts.

The house-to-house service is troubled most by the low frequency of collection (albeit it less pronounced in the high-income suburbs) and the costs of the services in relation to officially accepted rates (especially in the middle-income areas). However, the quality of the service is much better than in the collective container collection system. The indigenous private contractors showed a keen interest in the

⁹⁴ Even if the sub-metros have the capacity to monitor the operation of the CCW, of what use will be the impact of their report to the AMA on CCW whose operation is only subject to the political high echelon in Ghana, which awarded the contract? In fact, during our survey in December 2000, it became clear that nobody in the AMA, not even the Chief Executive could voice concern about the operation of the CCW contract.

franchising arrangement that enables them to keep control of their own revenues. Sadly, this option has evaporated with the arrival of CCW.

The analysis shows that privatisation has brought advantages to the consumers in terms of wider coverage, higher frequency and more reliable services (*i.e.* enhanced regularity of container haulage in areas working with the collective container collection system and fostered regular payment of service fees by residents in the house-to-house collection system). Furthermore, there is tremendous public support for privatised solid waste collection. At the same time, however, the evaluation shows that there are also a number of drawbacks. Private operators often use old (polluting) vehicles and equipment – especially in the middle-income areas – and continuously try to circumvent sanitary regulations. They also seem to stretch the exploitation of their workers to the limit. Therefore, the environment and the labourers are paying for part of the benefit. The major flaw of the entire system is, however, the lack of financial sustainability, which is related to the non-commercial/public good nature of the service and more particularly the social and political sensitivity of cost recovery in a poor country. The central government's decision in 1999 to impose a private monopoly in solid waste collection in order to speed up the process and solve the waste collection problem in the metropolis once and for all is criticised. It compounds the financial problems, hampers the development of an indigenous business sector and fails to build on the potentials of a system that seemed very promising. The financial viability of solid waste collection at city level partly depends on the success of cost recovery. In Accra there is an undeniable potential in this respect as apparent in the payment of user fees in the areas with house-to-house collection, as well as in the willingness of people in poorer areas to contribute financially to container site management and cleaning. However, policy makers should always recognise that market conditions for this service are imperfect and that many poor people simply cannot pay according to their consumption. Besides, all the overhead costs, as well as the development of container sites and sanitary landfills are borne by the local authorities and, therefore, their continued financial involvement must be accepted as a matter of fact.

The strain of solid waste collection costs on the overall local government budget is already extreme. This was probably the major reason why a further expansion of the scope of operations and quality of services was not feasible in the 1990s, despite the positive contribution of privatisation (at least without some sort of cost recovery in the collective container collection system). To a certain extent one can say that the indigenous private contractors now face the fear of being phased out not so much because of poor performance, but because the AMA/WMD was unable to generate the necessary means to make privatisation work. In its turn, this

signals the weakness of decentralisation policy that created local government departments and sub-metropolitan service units that were not equipped nor had the capacity to do their work properly. Furthermore, a decade of organisational turmoil and policy inconsistencies has certainly not contributed positively to the development of a professional government agency equipped to handle new contract management and performance monitoring tasks efficiently and effectively.

Meanwhile, the CCW took over the entire sector at costs that were unimaginable a few years ago and left the AMA at the continuous mercy of the central government (contrary to the idea of devolution). Granting a monopoly to CCW jeopardises efforts on the part of the World Bank and other donor agencies to build a vibrant local business class in solid waste collection. Undoubtedly, the CCW succeeded in substantially improving service performance. Whether the system will prove sustainable in the long run is debatable. A similar large-scale central government intervention together with a foreign firm in Abidjan (Ivory Coast) which involved the same Chagnon Group International of Canada – the parent company of the CCW – collapsed after some years for financial reasons leaving the city in shock. What will happen, for example, if the CCW folds and local capacity to take over is unavailable? Furthermore, there is real reason to believe that if the same improvement could not have been realised at considerably lower costs by supporting the indigenous contractors. If they were paid slightly higher tariffs and were helped in getting their businesses on track (*e.g.* by hiring out WMD vehicles and equipment or providing loans to buy new equipment) they would have been enabled to perform better, expand their services and obey sanitary and labour regulations. Within the prevailing neo-liberal climate, however, the idea of protecting nascent home industries was simply not considered.

The strength of the solid waste collection system that arose in the course of the 1990s was its diversity, the ability to develop arrangements that fit the peculiarities of the area and its inhabitants. This process, which was still evolving, was nearly nipped in the bud by an overzealous central government preoccupied with concerns of public health and city beautification at the cost of more appropriate, that is cheaper, locally grounded and publicly supported solutions. By building upon the strength of what was already there and improving on the flaws of these practices the quality and, in the end, sustainability, solid waste collection in Accra would probably have been served better. The CCW contract was abrogated in July 2001. The indigenous private contractors are now providing the services. It is too early to assess the performance of the local service providers, but if their performance in 1998 is anything to go by, then it could perhaps handle the task if they are paid ap-

preciable rates on a regular basis and if the local authorities supervise and monitor more effectively.

Finally, attention needs to be paid to an aspect that has been painfully neglected in the past, namely community participation in the decision-making process on issues concerning solid waste collection in their area. Policies have been designed in a traditional top-down manner without the consultation of residents. In order to enhance participation in solid waste collection services and improve cost recovery, it is vitally important that people are given a say in the design of the arrangements in their areas – for example on the question of whether upgrading to a house-to-house service is desirable – as well as on the determination of the fees that are affordable to them (accepting the need of continued government support to finance the solid waste collection system).

To finalise the performance assessment of solid waste collection in Accra, we will summarise the main findings concerning the three dimensions of institutional arrangements – socio-economic viability, environmental impact and system concerns – in the Tables 8.5-8.7 (see next pages).

The performance of the institutional arrangement for solid waste collection in recent times has come under serious scrutiny with many criticising them for failing to deliver to public expectations. Many people, in the face of the upsurge in user fees, particularly for house-to-house services, have expressed dissatisfaction at the delivery of such services and called for the adoption of stringent measures to enable the public get value for their money. Complaints have also emerged from service providers concerning the relatively lower rate of tariffs the local government authority set for them compared to what is paid to the CCW. Service providers think there are areas, which are currently serviced under the central communal container system, which could be serviced more effectively under the house-to-house refuse collection system. A very glaring example is Adabraka, which is a middle-income neighbourhood with one of the best road networks in the whole city. The easy accessibility to houses makes it eligible for house-to-house collection. Service providers pay drivers between ₵200,000 and ₵280,000 per month, whilst refuse collectors get between ₵120,000 and ₵180,000 per month, respectively. The contract for CCW contradicts the tenets of the decentralisation policy. This is a clear example of direct central government interference in local affairs.

Table 8.5 Performance assessment of various institutional arrangements in solid waste collection

Socio-economic viability	Variable	Indicator	Outcome
Consumers	Quality of service	Appreciation of collection frequency	Privately run arrangements have higher frequency for both the collective container collection and house-to-house collection system than the publicly run ones.
	Costs for consumer	Appreciation of costs	Unlike the high-income areas, cost is a major concern for the middle-income areas where the house-to-house collection system is operative. In the poor areas, cost is not a problem, apparently because the collective container collection system is free.
Providers	Employment impact	Labour intensity of technology	Irrespective of the type of technology used, not many people are employed. Normally, each vehicle uses three workers: a driver and two labourers. This applies to both the publicly and privately run collective container collection and house-to-house collection systems.
	Labour conditions	Labour turnover	High labour turnover because of poor working conditions. Tardy payment in privately run arrangements.
		Regularity of payment	Generally low incomes, but worse in the private sector.
		Wages	Poor employment benefits, particularly for the privately run arrangements
	Costs per container	Employment benefits	Waste workers in the public sector enjoy benefits such as health insurance, allowances for accommodation and transportation, similar to those open to other public sectors in similar categories. The same is not true for those in the private sector, whose benefits are comparatively lower.
(Only for the collective container collection system:) Approved house-to-house container		The local authority pays differential rates of US\$ 30.28 and €10,000 to CCW and indigenous private contractors, respectively. Households pay between €8,000 and €10,000/month depending on the size of container. Since November, the AMA revised the rates as follows: €40,000; €25,00 and €10,800 for 1 st class, 2 nd class and 3 rd class residential areas, respectively. 4 th class residential areas are to be levied on a daily basis. The exact rate yet to be fixed.	
Effectiveness	Mode of disposal	House-to-house collection is very efficient, but covers only 30% of the population. The collective container collection is effective because it covers 70%, but it is inefficient. However, more collective container collection areas are switching to house-to-house collection.	
General	Financial viability to local authority	Method of collection	Collective container collection is not viable for the local authority, but is viable for the private contractor. House-to-house collection is viable for both public and private service providers. The private providers have better cost-recovery and more effective and efficient collection of user-fees than the public provider.
	Scope of service	Mode of disposal and type of provider	There are no appreciable changes in the mode of disposal, i.e. house-to-house and collective container collection, since the policy interventions of decentralisation and privatisation in 1992 and 1997 respectively. However, in terms of type of provider, there have been drastic changes in the public versus private divide from a ratio of 80%: 20% in the pre-privatisation period to 20%: 80% as at 1999. However, when the CCW took over completely from WMD in mid 1999, the latter and for that matter the public sector ceased to participate in the actual waste collection.
	Social legitimacy	Better ways of collection	Demand for improved services for both privately and publicly run house-to-house and collective container collection, preference for private provider and call for transparency in award of contract are tests of public response to existing institutional arrangements.

Table 8.6 The environmental impact of various institutional arrangements in solid waste collection

Environmental impact	Variable	Indicator	Outcome
Consumers	Quality of service	Appreciation of cleanliness of service	Cleanliness is generally bad for the collective container collection system in low-income communities, whilst better in high and middle-income areas where the house-to-house collection system is operative. On the whole, the publicly run services have a better level of cleanliness than the privately run ones.
	Health problems	Injuries	There is no data to show that children sustain injuries from waste collection points.
		Primary storage	The predominant type of primary storage facilities linked to the collective container collection system results in increased littering and less hygiene.
Providers	Health occupational group	Direct exposure to waste	Field workers are exposed to occupational hazards, and scarcely use protective clothing.
	Age of vehicles	Age of vehicle	The average age of vehicles is about 15 years. These are potential sources of pollution and health hazards. The situation is worse with private local service providers.
General	City safe disposal	Dumping	Both consumers and service providers dump legally and illegally. Consumers dump illegally in open spaces, gutters and drains. Under the collective container collection system, consumers dump at the collection points, particularly when the containers are full. Some privately run house-to-house service providers dump at illegal sites.
		Minimisation of waste	Incineration
	Open burning		The most widely used method to reduce volume of waste. It is an uncontrolled process with negative environmental implications.
	Maximisation of use of waste materials	Reuse	Reuse of organic waste such as peels of plantain, cassava and food leftovers to feed livestock is widely practised in the low-income communities. Reuse of used cloth is very popular and widespread among the populace.
		Recycling	Currently, a limited amount of waste is recycled.
		Composting	There is very small-scale composting of organic manure. This may be due to the culture of low usage of both organic and inorganic fertiliser in the country at the moment.

Table 8.7 Performance monitoring of various institutional arrangements in solid waste collection

Monitoring	Variable	Indicator	Outcome
Socio-economic indicators	Performing according to institutional arrangements	Supervisory and regulatory organs	Ineffective monitoring and lapses affect socio-economic viability (financial viability, scope and quality of service) of both publicly and privately run arrangements, particularly the collective container collection systems.
		Adequacy of handling complaints about services	The present system of compliant handling, though very simple is not efficient because in most cases the problems are either addressed inefficiently or not at all. This is very prevalent in both the publicly and privately run collective container collection systems
		Adequacy of WMD sanctioning	There is no effective sanctioning by the AMA to deter offences, such as illegal dumping by both consumers and service providers.
Environmental impact indicators	Performing according to institutional arrangements	Supervisory and regulatory organs	The WMD and EHD do not monitor the institutional arrangements as required with dire consequences as environmental standards are hardly met.
		Adequacy of handling environmental complaints	The EHD does not go round to ensure that both consumers and service providers meet environmental standards. The method of handling environmental complaints is inadequate because of the lack of enforcement of sanitation byelaws with regard to both consumers and service providers.
		Adequacy of EHD's sanctioning	Extensive filth, particularly in some poor areas, testifies to the fact that the EHD scarcely prosecutes sanitary offenders in spite of the bylaws.