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**Institutional arrangements for private sector involvement
in urban solid waste collection:
Case study of five cities in Ghana**

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This paper discusses institutional arrangements for private sector involvement in urban solid waste delivery and provides understanding of the institutional gaps in Ghana context. Five cities in Ghana (Accra, Tema, Kumasi, Secondi-Takoradi, and Tamale) were selected for the study. This study suggests there were institutional arrangements – legal, regulatory and financial arrangements – for private sector involvement in solid waste collection. These arrangements include both service contracts for communal collection with subsidy paid by local government Assemblies and franchise contracts for house-to-house service with or without subsidy from the Assemblies. The involvement of private sector in solid waste collection had increased the collection rate and the proportion of house-to-house collection service without subsidy from the government. The major constraints were the inadequate capacity of the Assemblies, the long delay in paying for the contracts, low user charges and inadequate monitoring of quality of service.

Introduction

There are different institutional modes for private sector involvement (PSI) in water, sanitation and solid waste collection around the world (Saade et al., 2000; van Dijk, 2008). PSI is defined as participation ranging from complete private provision of public services to complete public provision with minimal private sector activity (van Dijk, 2008). The emergence of private provision, both formal and informal, as a promising alternative to public provision of public services in developing countries is still subject of debate.

Institutional arrangement for solid waste collection (SWC) concerns the institutional structures and measures as well as organisational procedures and the capacity of responsible institutions (Schübeler, 1996). Institutional arrangements may be either formal or informal, and those that are embedded and established social rules. The institutional arrangements seek to detail the legal, regulatory, financing arrangements and mode of delivery for solid waste collection. These arrangements characterize and provide framework for the role of the private and public sectors and community-based organizations in various stages of the waste management (storage, collection, disposal, and treatment).

The development and strengthening of institutional arrangements for PSI in SWC depend on the capacity of local governments (LG) to manage outsourcing contracts and enable the efforts of the private sector to deliver efficient and effective service. The ‘enablement role’ of the local governments requires the LG to ‘reduce role in direct service provision but facilitate, monitor and regulate private sector better and differently’ (Helmsing, 2002: 323). The enablement role involves facilitating efforts of private sector to provide SWC service, setting clear regulatory mechanisms (rules of the game), and monitoring the performance of private providers.

The three critical and interrelated aspects relating to institutional arrangements for sustainable water, sanitation and solid waste collection are the service quality, investment and tariffs (Hass, 1999). Well defined quality standards and target levels for solid waste collection determine the investment required, and the investment level in turn drives the tariff which aims at cost recovery. The legal and regulatory frameworks and the financing arrangements for PSI in delivery of solid waste collection are provided to

address the service quality, investment and tariffs levels for the solid waste service delivery. These institutional arrangements are iterative and interrelated, and an optimum best practices balance the interests of service quality, investment cost and service price (van Dijk, 2004). This paper discusses the role of the private sector in solid waste collection in Ghana, and the legal, regulatory and financing arrangements for involving the private sector in solid waste collection.

Methodology

The study area and selection of case study cities

The five largest cities (Accra, Kumasi, Tema, Sekondi-Takoradi, and Tamale) in Ghana were chosen for the study because of the rapid urbanization and expansion of their municipal or metropolitan setting. The criteria for the selection were based on spatial distribution and the size of population (five largest cities in the country). These cities benefited from World Bank's project (Urban Environmental Sanitation Project) of introduction of private sector involvement (PSI) in solid waste collection in the 1990s. According to the 2000 Population and Housing Census (Ghana Statistical Service, 2001), the urban centres of Accra, Tema, Kumasi and Sekondi-Takoradi accounted for about 44% of the total urban population, with some 350 urban centres with population above 5000 accounting for the remaining 66%. Accra and Kumasi alone accounted for about 34% of the total urban population while the other three cities for this study accounted for the remaining 10%.

Data collection and analysis

There are 46 private companies involved in solid waste collection in the five cities. A sample of 25 companies was selected for the study. Table 1 presents the study framework for data collection and analysis. The waste managers from the 25 companies were interviewed using structured questionnaire to assess the institutional aspects – legal, regulatory and financial arrangements. Solid waste disposal records on quantities of waste collected (in tonnes) for all the companies in the cities were collected from the Municipal Authorities for the analysis of the role of the private sector in term of the proportions of solid waste collected by the public and private sectors, and the proportions of communal and house-to-house collection services in the cities.

Aspects of the study	Definitions of variables
Legal arrangements	The legal arrangements were assessed using measures such as the type of contract, contract agreement signed, and adherence to contractual obligations and sanctioning of non-compliance of conditions of contracts.
Role of the private sector and mode of solid waste collection	Proportions of solid waste collected by the public and private sectors and proportions of communal collection and house-to-house services in the cities
Regulatory mechanisms	The arrangements for monitoring and regulating service quality, setting of user charges and access to information were used to assess the regulatory mechanisms.
Financing arrangements	The level of user charges, subsidies and the mode of collecting the charges were used to assess the financial arrangements.

Results and discussions

Legal arrangements and mandate for solid waste collection

The waste management functions in Ghana have been transferred from the central government to local government, as part of the decentralization process in 1988. The local governments (Metropolitan, Municipal, and District Assemblies) through the Local Government Act 1993 462 carry out the waste management functions. The Metropolitan, Municipal and District Assemblies are responsible for the collection and final disposal of solid waste. The Assemblies have a number of functional departments and one of the departments is the Waste Management Department (WMD), which is responsible for the liquid

and solid waste collection and disposal, cleansing of streets and drains, and supervision and monitoring of the activities of private contractors engaged by the Assembly.

Figure 1 shows the relationships and roles of the stakeholders (and institutions) in the institutional arrangements for solid waste collection. The Ministry of Local Government, Rural Development & Environment (MLGR&E) formulates solid waste and sanitation policies and also provides oversight role (A) to the Assemblies and also gives subsidies (B) for provision of SWC services. The EPA monitors and supervises the activities of the Assemblies especially disposal of solid waste.

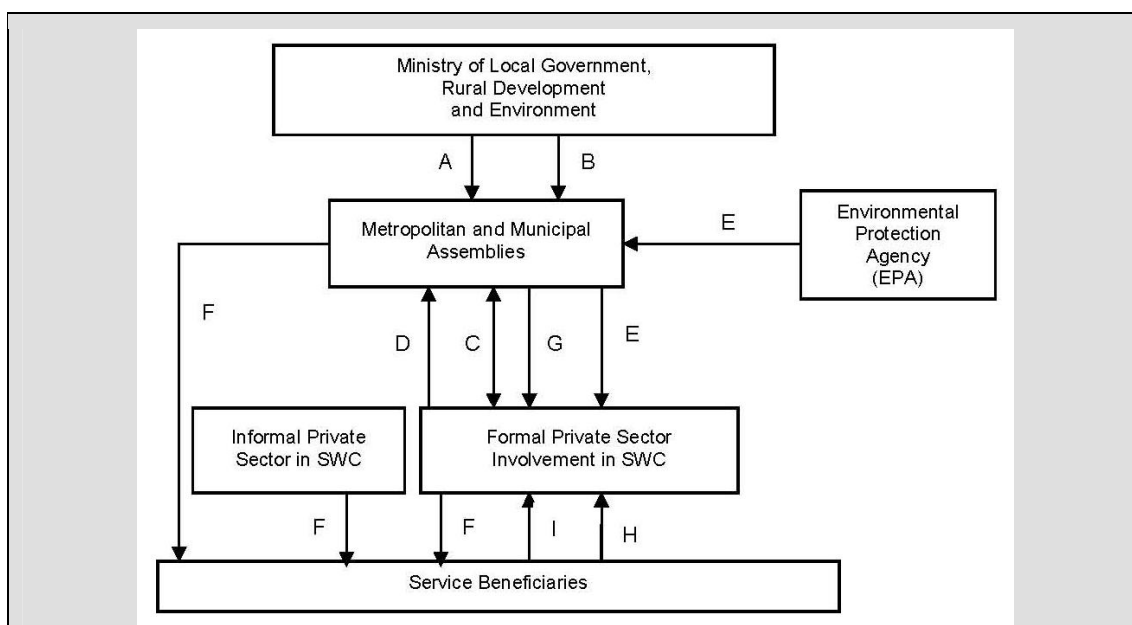


Figure 1 Relationships and roles of stakeholders in the Institutional arrangements for solid waste collection

- A - Sanitation and solid waste policies formulated for the Assembly to implement
- B - Provision of funds for solid waste collection activities
- C - Submission of reports on activities of private companies and access to data from Assembly
- D - Payment of charges to the Assembly by private companies.
- E - Supervision and monitoring of activities of service providers
- F - Rendering of services to service beneficiaries by the Assembly or private companies
- G - Release of funds to private companies for services rendered
- H - Payment of user charges to private companies by service beneficiaries
- I - Complaints about service quality by beneficiaries.

The relationships between the Assemblies and the private sector involve submission of reports by private companies to the Assemblies, payment of charges to the Assembly by private companies, and monitoring and supervision of activities of private service providers by the Assemblies. The Assemblies and private companies render services (F) to service beneficiaries. The private companies recover cost of services rendered through subsidy payments by the Assemblies (G) and payment of user charges (H) to private companies by service beneficiaries.

Role of the private sector in solid waste collection

The main type of collection service in the five cities are the communal collection and house-to-house. Table 2 shows the number of companies in the cities and the proportions of solid waste collected in 2007 by the private sector and type of collection. The communal mode of collection was predominant in the cities.

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The proportions of waste collected by communal collection service in the cities ranged from 35 to 94%. More than 82% of the solid waste collected in four cities was by communal collection mode, apart from Tema (35%). Communal collection is a system of solid waste collection, in which individuals bring and empty their solid waste directly into communal skip containers at secondary collection points, from where the waste is collected and transported to the disposal site by the private companies.

The house-to-house solid waste collection provided was less than 20% of waste collected in four cities, but high (65%) for Tema due to its planned settlement nature and income level of the people. House-to-house collection is a method of domestic solid waste collection, in which the individuals place bins full of waste outside their houses at the curb side or roadside on specific days for collection. The residents served by the house-to-house waste collection use standard bins (120 or 240 litres). The house-to-house service is rendered in the high and middle income areas.

Table 3 shows the population of the cities and solid waste collection rate. The solid waste collected used in the analysis excludes the waste material that is generated but does not enter the municipal waste stream because it is reuse by residents or collected from residents and sold separately by itinerant waste buyers and collectors. The introduction of private sector in solid waste collection increased the proportion of waste generated which was collected (collection rate) from 10%-60% in 1997 to the range of 57% to 77 in 2004. The collection rate is the proportion of solid waste generated which is actually collected and disposed of from the city. The collection rate increased as a result of the introduction of PSI by World Bank's Urban Environmental Sanitation Project (UESP). There has been increased PSI between 2004 and 2008 with more companies entering into solid waste business. However, the collection rates of two cities (Tamale and Sekondi-Takoradi) decreased between 2004 and 2007, despite high PSI in Tamale. The capacities of the companies in Tamale were low and did not match the quantity of waste generated. This suggests that high levels of PSI couple with high capacity in terms of collection trucks should lead to increase collection rate.

City	Number of formal private companies	Institutional mode for solid waste collection		Mode of collection	
		Public sector (%)	Private sector (%)	House-to-house (%)	Communal (%)
Accra	18	0	100	6	94
Kumasi	8	8	92	18	82
Tema	11	14	68	65	35
Sekondi Takoradi	3	46	54	17	83
Tamale	6	26	74	12	88

Source: from analysis of field data collected

There is an increasing role of the private sector in solid waste collection service. More than 50% of the solid waste in the cities was collected by the formal private sector. According to the Ghana Environmental Sanitation Policy (2007), the Waste Management Department of the Assembly is mandated to maintain an in-house capacity to provide at least twenty (20) per cent of the solid waste services directly and outsourced the 80% to the private sector. The public sector in Tamale and Sekondi-Takoradi collected 26% and 46% of solid waste (Table 2) respectively as against at least 20% stated in the policy. The degree of private sector involvement depends on the in-house capacity and resources of the Assembly to provide direct service. The Assembly with limited in-house capacity requires high level of PSI with adequate capacity to increase collection rate. For example, among the five cities, Sekondi-Takoradi had the lowest PSI and low collection rate (55%). The city with few companies (Sekondi-Takoradi) had 54% PSI whereas the largest city (Accra) with 18 companies had 100% PSI.

City	2000 Population	1997 (%)	2004 ¹ UESP (%)	2007 ² (%)
Accra	1,700,000	60	63	80
Kumasi	1,200,000	45	77	91
Tema	506,000	50	60	84
Sekondi Takoradi	400,000	40	72	55
Tamale	275,000	10	57	40

¹ Outcome of UESP-Urban Environmental Sanitation Project (1997-2003) from Boakye (2005); ² Analysis of field data.

Regulatory framework for solid waste collection

The regulation of waste management in Ghana is undertaken by the Environmental Protection Agency (EPA). The regulatory frameworks guiding the management of solid waste include the Local Government Act (1993), the Environmental Protection Agency Act 490 (1994), the Pesticides Control and Management Act 528 (1996), the Environmental Assessment Regulations LI1652 (1999), the Environmental Sanitation Policy of Ghana (1999), the Guidelines for the Development and Management of Landfills in Ghana, and the Guidelines for Bio-medical Waste (2000). All these Acts and regulations emanate from the National Environmental Action Plan. The regulation by EPA focuses on management of landfills in Ghana, management of healthcare and veterinary waste. The management of the designated disposal or landfill sites of the Assemblies is monitored by EPA but the level of uncollected waste within the cities is not monitored by EPA.

The regulation of the waste business by contract (market regulation) is practiced in the solid waste sub-sector. This form of regulation by contract seeks to promote competition through legal restrictions and regulatory rules and controls regarding both market entry, the capacities of companies operating in the waste market, the service standards and user charges. The Assemblies are required to outsource solid waste collection to private sector service through contracts and also conduct regular monitoring of the quality of service rendered by the private service providers and sanction any non-compliance according to the regulations and terms of the contract.

The analysis showed that some level of monitoring of solid waste collection and uncollected waste within the cities was conducted by the Assemblies. But the private companies which did not comply with service standards set in the contracts were not sanctioned as stipulated in the contract due the failure on the part of the Assemblies to adhere to the contract payment obligation. The Assemblies made payments to the companies for the services they provided but such payments were usually delayed. The role of the Municipal/Metropolitan Assembly is to monitor and regulate solid waste companies, but the data showed that the Assemblies had limited capacity to regulate and monitor solid waste companies. Regular monitoring of quality of service was hampered because of inadequate capacity and resources of the Assemblies and the long delay in paying for the contracts.

The access to information by the Assemblies can also determine to which extent they carry out regulation controls, but cost information asymmetry was common in the cities. Getting cost data from the companies was difficult and so the Assemblies relied on their own cost data for setting and approving user charges. For monitoring quality of service rendered by the waste companies, the Assembly must have access to service and cost information from the waste companies. Important information includes performance targets, tonnage of waste disposed of and cost incurred. The private companies are required to submit monthly and annual reports to the Assembly as part of monitoring and regulation of the services provided by the private companies.

The Assemblies' roles of public education on the solid waste management issues and the enforcement of law on indiscriminate dumping of solid waste were not done. The complaints of uncollected waste were usually reported in the media or by the local Assembly representatives (called Assemblymen) or by the residents.

Contractual arrangements for solid waste collection

Solid waste management is no longer a (local) government monopoly but open to various modes of PSI or public-private partnerships either through service contract agreements or direct franchise contract

arrangements. The communal solid waste collection services are provided under service contract arrangements between the Assemblies (Municipal Authorities) and the private companies. The Municipal Authorities pay the companies in the form of subsidy for the services delivered. The house-to-house solid waste collection services are provided under franchise contract arrangements between the Municipal Authorities and the private companies. Out of the twenty five (25) companies across cities, nineteen (19) private companies had both communal service contract and franchise contract for house-to-house service. The other six companies were involved in either communal service contract or franchise contract. Contractual agreement is signed by between the Assembly and the private company involved in communal service contract and the franchise contract. The franchise contract without subsidy from Assembly usually were rendered by the companies without written contract, but a form of permission to provide service in a particular delineated zone was approved.

All the companies admitted that there were delays in payments by the Assemblies. The major challenge with the legal arrangement was how to sanction the companies for non-compliance to terms and conditions in the contracts. The sanctions were usually not enforced because the Assemblies most of the time failed to adhere to their obligations for paying the companies within 45 days of claim submission. The payment of interest by the Assemblies on money delayed was not done but no legal actions were taken by the companies. Trust, cooperation and decrease in the quality of service appeared to be the driving factors for sustaining the private sector in business, but the companies were of the view that they were highly responsive to the Assemblies' requirements of service quality.

Financial arrangements for solid waste collection

An institutional arrangement for involving the private sector in solid waste collection may be regarded as financially viable if the cost recovery mechanisms can sustain the service delivery for the private sector to remain in business. Unfortunately, it was impossible to carry out a cost-benefit analysis and to draw conclusions on the financial viability of waste business, since the private providers were unwilling to disclose cost data.

Table 4 shows the differences in the service and user charges for communal service contracts and the house-to-house service in the cities. According to the waste companies and the Assemblies, the price per tonne for communal waste collected by the companies ranged from nine to ten Ghana Cedis (Gh¢9.00 to Gh¢10.00). The cost recovery mechanisms for the communal collection service are subsidy from the Assembly and user charge (pay-as-you-dump). The communal service is rendered in low income suburbs where most of the people are low-income earners. Before 2007 the communal users in Accra, Kumasi, Tamale and Sekondi Takoradi did not pay for dumping into the communal containers. Charging for dumping waste into communal containers started in 2008, where the users pay user charge of GH¢0.10 or GH¢0.20 per head-load depending on the quantity of head-load.

The companies rendering the communal service were tasked by the Assembly to collect the user charges from the zone of operation. The companies have assigned two revenue collectors to each communal collection point to collect user charges daily on pay-as-you-dump basis. The Assembly gives to each company a subsidy equal to the difference between the estimated revenue collected from the users per tonne and the communal collection cost of Gh¢10.00 per tonne. This subsidy was estimated to be about 50% of the cost per tonne, but the policy is to reduce this subsidy over a time period so that the communal users will bear 100% of the cost of collection excluding the disposal cost. In the case of Tema, the Local Government (Municipal Assembly) collects monthly user charge of GH¢ 0.80 per household as user fee from residents served with communal waste collection service.

Under the franchise contract arrangements the companies collect user charges from the users and subsidy from the Municipal Authorities for some areas. The house-to-house service charges, ranging from GH¢ 2.00 to GH¢12.00 per month per bin, are based on the level of income (low, medium and high) and vary from city to city. The user charges collected from beneficiaries under the franchise contracts were either set by the Assemblies or set by the companies and approved by the Assemblies. The companies rendering the franchise contracts collect these approved fees from their customers on monthly basis or any other agreed time. Some users defaulted in paying the user charges but they were not sanctioned. The challenge facing the companies is how to sanction those who default in paying the user charges, since these people cannot be excluded from the service because of the negative externalities.

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Table 4 Service charges by companies				
City	House-to-house service (GH¢/month/bin)			Communal service¹ (GH¢/tonne)
	Low	medium	high	
Kumasi	2.00	2.50	4.00	9.00
Accra	2.50	6.00	10.00-12.00	10.00
Tema	2.00	2.40	6.00-11.00	9.00-10.00
Sekondi Takoradi	1.50-2.00	3.00	4.00	9.00
Tamale	1.00	2.00	3.00- 4.00	9.00

US\$1 = GH¢1.2

¹. Cost per tonne paid to the companies (users pay GH¢0.10 or GH¢0.20 for each head-load).

Source: Oduro-Kwarteng and van Dijk (2008).

The user charges vary from city to city and also vary within the same city because of the income levels of the people. The differences in the levels of the user fees and the mix of house-to-house service (franchise contract) and communal service (service contract) may indirectly affect companies' service quality. Further analysis of these differences will provide better understanding of the effect of user charges on the quality of services. The difference in the charges may lead to inadequate private finance which reflects in the use of over aged vehicles (above 10 years). The use of over aged vehicles results in poor coverage and low quality services due to frequent vehicle breakdown. Incentives such as reduction in import tax on solid waste vehicles should be provided for the companies.

The current solid waste collection situation is better due to the PSI but the main challenge is how to increase the coverage of house-to-house services and set cost recovery user charges for both franchise and service contracts to raise sufficient funds to cover cost of solid waste services. There is financial burden on the central and local governments to render the communal mode of solid waste collection due to low cost recovery. Efforts were being made to charge for the communal mode of service using pay-as-you-dump mechanism. This is intended to generate revenue to reduce the level of subsidy.

Conclusions

This paper examined the institutional arrangements for private sector involvement in urban solid waste collection using Ghana as a case study. There is an increasing role of the private sector in solid waste collection service. More than 50% of the solid waste in the cities was collected by the formal private sector. The involvement of private sector in solid waste collection had increased the coverage, collection rate and the proportion of house-to-house collection service without subsidy from the government. There were institutional arrangements – legal, regulatory and financial arrangements – for private sector involvement in solid waste collection. These arrangements for involving private companies include both communal service contract with payment by Assemblies and franchise contract for house-to-house service with or without subsidy from the Assembly. The Assemblies have the mandate to monitor the solid waste collection and to sanction private companies which do not comply with service standards set in the contracts. Subsidy and user charges are the main cost recovery mechanisms for both franchise and service contracts to raise funds to cover cost of solid waste services. The user charges vary from city to city and also vary within the same city, but some of the companies served the areas where the user charges were low, and this may lead to low profit and inadequate private finance. Efforts were being made to collect user charges for the communal mode of service using pay-as-you-dump mechanism, but the main challenge is how to increase the coverage of house-to-house services and set cost recovery user charges for both franchise and service contracts to raise funds to fully recover the collection cost of solid waste services. The major constraints were the inadequate capacity and resources of the Assemblies, the long delay in paying for the contracts, and inadequate monitoring of quality of service.

Recommendations

The role of the local governments (Assemblies) to facilitate, monitor and regulate the private sector involved in solid waste collection will be better carried out if the necessary capacity and resources are provided. The Assemblies should ensure that they outsource solid waste collection to companies with adequate capacity for better impact of the PSI. To better facilitate and regulate PSI in solid waste collection clearly defined standards and service quality need to be included in the contract for regulating the private sector activity. Law on indiscriminate dumping should be enforced alongside charging for solid waste collection service.

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